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THROUGH THE PENNSYLVANIA COAL REGIONS.

By PATHFINDER.

PHILADELPHIA, April 9.—It might be thought that no one would choose, as the time for an extensive tour, the first week in April, particularly if the itinerary led over the all but impassable mountain roads of eastern Pennsylvania. Yet this is exactly the trip which E. C. Johnston, of Philadelphia, and party, in a White steamer, brought to a successful conclusion on Saturday of last week. The tour was through a country which, in any season, would be of much interest, but the tourists viewed at close range—in fact, participated in—the stirring incidents which marked the first week of the suspension of work in the anthracite regions, and had opportunity for unusual observation.

Mr. Johnson and his companions left Philadelphia Monday morning, April 2, and toured by way of Bryn Mawr to the historic camp site of Valley Forge, then through Phœnixville and Royersford to the Reading Pike and through Pottstown and Douglassville to Reading. Then, turning north and following closely the valley of the Schuylkill river, they continued through the center of prosperous Berks county to Hamburg, a little town of some 2,500 inhabitants, which, in its marked German characteristics, is typical of most of the communities in that locality.

After spending the night at Hamburg the tourists hastened the next morning to Pottsville, here leaving the main highway

WHEN DRIVER MEETS DRIVER—AN EPISODE OF A TOUR IN THE PENNSYLVANIA COAL COUNTRY.

APPROACHING THE LITTLE DUTCH TOWN OF ROYERSFORD, EN ROUTE TO THE COAL REGIONS.

and heading northeasterly for the heart of the coal regions, which are so abundantly supplied with railroads that no attention is paid to the roads. At least no attempt has been made so far this year to make them passable. As far as Pottsville, it should be said, the roads might be described as "fair to medium."

Before many miles had been covered out of Pottsville evidences began to multiply that the coal regions were close at hand. Wherever there was a valley or other natural depression a spur of railroad had been built as a means of disposing of the culm which accumulates wherever anthracite mining is carried on.

Near Tamaqua the first collieries were seen, and, from that time on, the tourists were never many miles away from a mining settlement. From Tamaqua the route lay due north alongside a raging mountain torrent, toward Hometown. Thence a great mountain range was crossed, and from its summit the tourists saw the towering coal breakers of McAdoo, Audenried and Hazelton.

On reaching these settlements a considerable number of men were seen at work around the collieries. On being interviewed, they were careful to show their "working buttons" and to explain that they were doing only repair work and other odd jobs "allowed by the union." A party of them were given a ride around the valley, and they undoubtedly alighted from the machine with a more friendly disposition toward the motor car than they had exhibited when the tourists first approached them.

A FAIR SAMPLE OF SOME OF THE ROADS ENCOUNTERED.

A visit was then made to the homes of the miners. Their ramshackle, unpainted houses told the story of great poverty, and the tourists could not help but sympathize with the attempt of the miners to secure increased pay. The miners in this region are mostly Hungarians, who seemed a rather orderly lot and who hung round in little groups, apparently enjoying their few days of respite from toil.

Leaving Hazleton on Wednesday morning, the route of the tourists lay through the mining settlements of Harleigh, Eber-

GENERAL WASHINGTON'S HEADQUARTERS AT VALLEY FORGE.

vale, Jeddo and Eckley, all of them very similar to the hamlets south of Hazleton.

One of the most exciting moments of the entire tour was the coast down Eckley Mountain. The tourists, without warning, found themselves on a steep road with the mountain on one side and a deep ravine on the other. The road was covered with melting snow, under which was a layer of slippery clay, and the car half skidded, half coasted down this dangerous pass, and the tourists breathed a sigh of relief when they reached the valley beyond in safety.

White Haven was the next important town to be reached, and then came a ride of fifteen miles to Bear Creek, during which not a single human habitation was seen. The region was very high and uninviting, and the only vegetation observable were a few hardy, stunted fir trees. However, along this piece of road there were several magnificent waterfalls, which, in a measure, compensated the tourists for the arduous going.

The route was then turned toward Wilkes-Barre, and the tourists approached this town down the same road which is next

month to be the scene of an important hill-climbing contest. Around Wilkes-Barre—in fact, throughout the entire Wyoming Valley—a far different condition of affairs prevailed than around Hazleton. The mines in the Wyoming Valley are manned mostly by Italians, with a reputation for ferocity and disregard of the law. Excitement was at fever heat and a company of the state constabulary was patrolling the valley. This squad of men numbered only fifty. Many of them had seen service in the Spanish War and their business-like appearance, their skill in handling their horses, and the formidable display of weapons which they carried in full view seemed to overawe the striking Italians, who outnumbered them almost a thousand to one.

When Mr. Johnson and his party attempted to visit the collieries in the vicinity the strikers showed a very threatening attitude, as they jumped at the conclusion that the tourists must be on some mission in the interests of the companies owning the mines. After several unpleasant experiences the tourists thought it wise to ask the commander of the constabulary if they might accompany the troops while on patrol.

A typical experience was the arrest of some Italians at the Fernwood Colliery. This colliery is situated in a lonely, isolated

PAYING TOLL—A RELIC OF 18th CENTURY BARBARISM.

spot several miles back from the Susquehanna river and was from the first the center of considerable disturbance, because the company was operating the washery with non-union men.

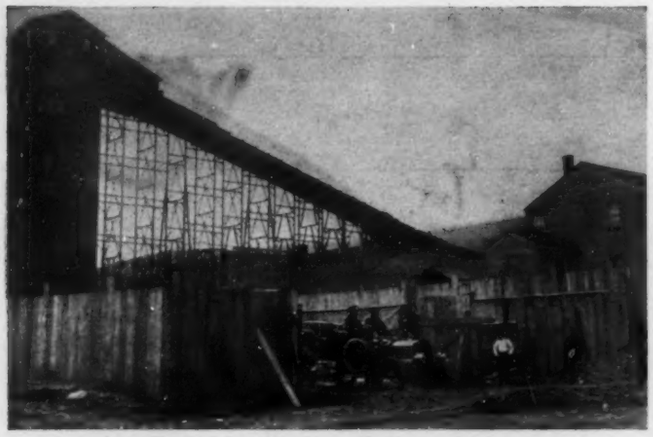
The night before the arrival of the tourists in the Wyoming Valley the Italians had given vent to their feelings by firing their revolvers at the colliery buildings, and the authorities feared that the next weapon which they used would be dynamite. Accordingly, a dozen or so of the constabulary were deputed to arrest certain men thought to be the ringleaders of the strikers. The automobile went ahead into the miners' village and was immediately surrounded by a half curious, half threatening mob. While they were absorbed in sizing up the tourists the constabulary came galloping up, and, in less time than it takes to tell, had snapped the handcuffs on the men they wanted; and automobile and troops were out of the town before the miners had recovered from their surprise.

"DOWN BRAKES" DESCENDING ECKLEY MOUNTAIN.

A number of the collieries visited by the tourists looked like fortifications. They were surrounded by stockades of stout timbers, surmounted by lines of barbed wire. Behind these barricades were guards employed by the companies, whose only instructions were to "Shoot first and shoot straight." It was evident that the only thing which was preventing great riot and bloodshed in this district was the fact that the conferences then being held in New York made it seem quite probable that work would be resumed without an extensive strike.

Two days of this sort of exciting experience was quite sufficient, and the return trip was started from Scranton on Friday afternoon about 4 o'clock. Local automobilists appealed to Mr. Johnson and his party not to try the return trip, because there were a dozen places which, they declared, were absolutely impassable. The first of these was the dreaded Scrub Oak Moun-

A BIT OF PICTURESQUE PENNSYLVANIA SCENERY ON THE ROCK-BOUND ROAD TO TAMAQUA.



STOCKADES NOW SURROUND THE GIANT COAL BREAKERS.

tain outside of Scranton. The woman who collected toll as the party approached the mountain told them that no teams had been through for two days, and to get through with a heavy machine loaded with five passengers was out of the question. Her prophecy almost came true, as several times both axles were aground in the mud, despite the unusual clearance of the car. But by crowding on every available pound of steam and by "simpling" the engine the mountain was finally crossed.

The next quagmire was encountered in the peculiar swampy

MOUNTED CONSTABULARY FROM WYOMING AT FERNWOOD COLLIERY.

promontory which lies between Daleville and Tobyhanna. On more than one occasion it seemed as if no further progress could be made, but each time the car proved equal to the task of getting through. A late supper was taken at Tobyhanna, and, as there was a magnificent moon and the night was unusually clear, it was determined to continue running.

ONE OF THE MOUNTAINS OF COAL AT A MARKLE COLLIERY.

So on went the tourists over the summit of Mount Pocono, then down its steep southern incline through Henryville to Stroudsburg. Then, aided by the friendly moon and encouraged by the knowledge that good roads lay not many miles ahead, Mr. Johnson guided his car through Saylorsburg and Wind Gap and then to Nazareth, where a fine stretch of macadamized road was found which led them to Bethlehem. Here the tourists snatched a few hours of sleep, and, in the morning, quickly passed over the fifty-three miles which separate Bethlehem from Philadelphia. They arrived at Philadelphia at noon travel stained and bronzed by the sun but, like their machine, none the worse after their eventful and rather arduous week's tour through an even dozen of the counties of eastern Pennsylvania.

STREET SCENE IN HAZLETON WHERE THE MINERS LIVE.

WILMINGTONIANS PROGRESSING.

WILMINGTON, DEL., April 9.—Until recently most of the machines in use here, except those kept in the public garages, were stored in stables, barns and other emergency shelters, but during the late winter and spring several fine private garages have been built. Work was started last Saturday on one for Elmer E. Mitchell, a prominent manufacturer, at Pennsylvania avenue and Broome streets. Pennsylvania avenue is one of the finest auto-

ON THE ROAD TO HOME CITY.

mobile thoroughfares in the city, and Mr. Mitchell lives in easy reach of the country and at the same time convenient to the city.

Automobiles have been pressed into service several times lately to convey physicians from Wilmington to points down the state when there were emergency calls on Sundays. On two occasions recently physicians went to Middletown, twenty-five miles below Wilmington, in automobiles to attend patients. One was a specialist from Philadelphia, who was surprised, on arriving here, to find no train service down the state on the Sabbath. The case was an imperative one, and so he found an automobile.

UNSOLVED PROBLEMS IN AUTO ENGINEERING.

A NUMBER of very interesting suggestions regarding possible modifications in automobile construction were made by Lieut.-Col. R. E. B. Crompton in an address before a recent meeting of the Automobile and Cycle Engineers' Institution in London. The colonel is one of the veterans of the industry, having been interested in the technical problems of power road vehicles for the past forty years. He is an engineer of note and his address was made before an audience which included many of the leading automobile engineers in Britain. Reaching the technical part of his address, after a few introductory statements about the unsolved problems in automobile engineering, he said: "The distinctive features of the pleasure car may be stated at present to be the following: We see a long low-hung chassis, with a wheelbase of from 9 to 12 feet, running as a rule on four equal-sized pneumatic-tired wheels from 30 inches to 34 inches in diameter, in the majority of cases its engine being placed vertically in front of the vehicle with the crankshaft placed longitudinally, driving the rear axle through bevel gear, countershaft, and chains, or driving what is called a live axle by a cardan shaft provided with either bevel or worm gear driving the live axle.

Present Arrangement of Cars.

"I think it will be generally admitted that the present arrangement of the motor car has been arrived at on account of one or two special causes. First, the introduction of pneumatic tires, which at once allowed of a great reduction in the size of the wheel, the early vehicles, when first rigid tires, and then solid rubber tires, were used, had their wheels of large diameter—and necessarily so—but immediately the pneumatic tire was forced on to the notice of the builder of motor cars, the diameter of the wheels was reduced, and so some difficulties were done away with. This reduction in the size of wheels, when added to the necessity for keeping the center of gravity very low, enabled the vehicles, which had quickly risen to being very speedy vehicles, to swing round corners at a high speed—a highly reprehensible practice, but still indulged in. These two causes are chiefly responsible for the small diameter of wheels, which we are familiar with now, and for the vehicles as a rule being hung much closer to the ground than was at first the case, or than is really necessary for touring purposes or town use. In fact, from one or two points of view, which I will discuss later, the vehicles are now hung too close to the ground.

"The general adoption of the other distinctive feature—the vertical engine placed in front—arises no doubt from the extreme convenience it afforded to the designer to increase the power of the engine and the even turning moment by increasing the number of cylinders, as it gives him plenty of space to do it in. All he has to do is to somewhat lengthen his car. The original one or two cylinder engine is now rarely seen, for, except in very small cars, four cylinders are the rule, and during the last year or so we have had strong representations from designers that six or eight cylinders are desirable in order to obtain the requisite elasticity of drive, the even turning moment we require in order to obtain increased durability of our rubber tires.

"Another reason why a vertically-arranged engine has hitherto been so popular is that the parts which deserve the attention of the driver most—I allude to the valves and to the various ignition devices—are brought into the most accessible position close to the top of the cylinders.

"The long wheelbase, which is such a distinctive feature of the car of the day, was undoubtedly called for by the desire to give side entrance to the car in place of the extremely inconvenient entrance to the car at the back.

"These general features of design appear to be so universally accepted that any engineer who varies them to any considerable extent is at once dubbed a freak producer. I think it is a great pity that this should be the case, for we certainly do not desire to stifle originality in design. Moreover, I hope to show that, although the present accepted form of motor vehicle does, on the whole, give excellent results when used by the present public who buy them for touring purposes or town use, yet when the same general features of design are extended to commercial vehicles, vans, omnibuses, and the like, the severe conditions of long mileage show that the present designs are far from satisfactory, and that if ultimate commercial success is to be obtained, it is probable that radical modifications of design must be introduced.

"Following on these general observations, I now propose to discuss in detail the features of the motor vehicle on which improvements or alteration appear to be desirable.

Features for Improvement.

"You will be surprised to hear that I do not propose to devote much time to the engine proper. The engine has been almost invariably the internal combustion engine, using the Otto cycle and low specific gravity petroleum spirit or gasoline as fuel. Great attention has been devoted to every organ of the engine. Carbureters, ignition devices, mechanically or automatically-operated induction valves, the accessibility of exhaust valves, and of the parts generally, have been subjected to complete and thorough study. We have now the choice of many forms of electric or electro-magnetic ignition, so that so long as we still employ the Otto cycle, rendering four, and possibly a greater number of cylinders, necessary to obtain a reasonably even turning moment, we cannot look forward to the probability of any great improvement in the engine proper. Perhaps I should make one exception, and say that a great deal requires to be done to one organ—the carbureter—before it will be satisfactory for dealing with fuel somewhat heavier than ordinary gasoline, such as benzoline, or paraffin, which is so much desired for commercial vehicles or for military purposes.

"The real development to which I hope the attention of inventors must be directed in the future is the perfecting of a different form of internal combustion engine. I allude to what was known a few years back as the Brayton type of engine. Brayton attempted to obtain the simplicity of the steam engine by providing a means of storing under pressure an explosive mixture in a separate chamber from which it passed to the cylinders, and was burned, so as to afford almost as steady pressure as steam-engines.

"I know that this design presents many difficulties. I know many good men have worked at it without making much progress, but the comparative success obtained by Brayton is encouraging, and I consider that now so many trained minds have been working on the Otto cycle engine it is probable that if their minds were directed to the Brayton engine, it could be perfected into a useful form."

It will be noted by the reader that Col. Crompton has ignored the possibilities of alcohol for fuel and the two-cycle motor as a prime mover of extraordinary simplicity. As he has not recorded any technical dislike of these important aids to invention it is probable that he has not given them serious attention. This is not remarkable, however, in view of the fact that very little attention has been given to alcohol as a fuel or to the two-cycle motor by British designers.

Steam and Explosion Motors.

After discussing the relative merits of the steam-engine and the internal-combustion motor, and presenting tables of comparative cost, Col. Crompton continued: "The workers on the steam car have been few, but they have shown many times the capacity that the workers have on the other class of engine. There have only been about six or eight or ten, or no more than

you could count on your fingers, who have devoted their attention to steam, but they have added more to the knowledge of steam, and all interested in its use, than the whole of the thousands of workers on the internal combustion engine had added to the stock of knowledge with regard to their particular engine. Serpollet, White, Miesse, and others, by their improvements in the flash and semi-flash boilers, not to mention the extraordinary feats done by Stanley, have converted the boiler from being the most troublesome organ requiring perpetual attention and care in maintenance to the part which practically requires no attention, but there is still great room for improvement in the means of vaporizing and burning the liquid fuel. The men whose names I have mentioned have opened up a new vista for steam. They use a new fluid. Superheated steam at the high temperatures obtained no longer behaves like steam, and no doubt its use is due to the rivalry and competition—the wholly healthy competition—of the gasoline car."

The Question of Gearing.

Taking up the question of gearing, the speaker said: "The self-propelled road vehicle differs from the locomotive on rails in one important particular. The former must have gearing interposed between the crankshaft and the road wheels, whereas in the locomotive on rails we find a true direct drive. The driving axle is the crankshaft, and it is really a one-shaft drive, as the traction engine people call it. In fact, the so-called direct drive of the motor car people is not a direct drive; it is a two-shaft drive in the case of steam cars; and there are really never less than three shafts used in the case of gasoline-driven cars, for one shaft must be used for the change-speed or reverse. Whenever chains are used, it is really a four-shaft drive.

"This multiplicity of shafts and gear wheels is a feature of the modern car which I feel confident will not long survive. In order that the internal combustion engine may arrive at equal simplicity of drive with the steam-engine, it is necessary that a radical departure should be made in the whole design of the internal combustion engine; instead of being content with the Otto cycle, with only one useful effort per cylinder for every two revolutions, the old Brayton idea must be worked out, of obtaining elastic pressure in a chamber, from which the elastic pressure would be admitted to the cylinders in turn, as is the case with the steam from a boiler.

"We may be far from this solution of the problem, but it is evidently worth striving for; but so long as we have the present Otto cycle engine with us it is necessary to see what we can do with the present form of gear by way of simplification. We must reduce the shafts to three, *i.e.*, the driving axle, the cardan shaft driving it, and a clutch combined with a means of reversing which will not involve movement of the idle portions during the direct drive. You say you have that, but at present we have nearly always in addition two or three other speeds with idle wheels, which are the main cause of the noise and wear.

"Next, as to the gearing itself. In the majority of cases, bevel gearing is interposed as a means of changing the direction of the shaft; that is to say, either between the crankshaft and countershaft, when chains are used, or between the cardan shaft and the live axle when so-called direct drive is used. In both cases the workmanship of the bevel gear has reached great perfection. It works for a very long period silently and without apparent wear. This has been effected by the extremely accurate adjustment of the two shafts, and by the use of ball thrust bearings, to maintain them so equally in position. This accurate adjustment is of immense importance. The very smallest movement of either one or the other will change the line contact of the perfect bevel gear into point contact, and that can only again become line contact by the wear of the gear. Theoretically, the best form of gear to be interposed between two shafts working at right angles is the worm gear, of which the Lancaster has been the chief exponent. One of the great advantages of the worm gear, properly designed, is that you are able so to design your worm wheel that you get surface contact sufficient in amount to bear the burden of a film of oil, and not squeeze that film of oil out, which is quite impossible with ordinary gear. This is possible with worm gear, and has been frequently done in electric drives.

Wheels, Tires, Springs and Axles.

Now we turn to wheels, tires, springs and axles. I think we must take them all as one. The one man who has most profoundly influenced the motor car is the late R. W. Thomson, the man who invented the pneumatic tire, and the solid rubber tire too.

"The designers of the modern pneumatic tire with its cover have been heard very little of, but they are a race of men that the world is tremendously indebted to, and who have made the present modern motor car possible. The work of design and the calculation of the stresses that occur inside the fabric of the covers of the pneumatic tire are so complex, so difficult to understand, that I will defy anybody to represent them on the blackboard. But the material stands. The life of the tires is very considerable, and the problem now before us is how we can make their life still more considerable.

"The invention of the pneumatic tire, as I have already said, simplified the wheel question. The heavy cost of material, the amount of work in its manufacture, caused the size of the tire to be cut down. Diameters of driving wheels which used to be formerly 4 feet or 5 feet, were at once cut down to 34 inches or 35 inches as a maximum, and in that respect the car designer gained, and the wheel designer had an easy task; for you will see that with low wheels so beautifully cushioned as those were, almost anything would stand. The only thing necessary to provide against was that the wheels should have sufficient side stability to enable them to stand the blows from severe side-slip or from being rapidly driven round corners. At any rate, the artillery wheel commonly used, and which is a poor thing after all, was quite good enough for the purpose as long as wheels of that diameter were used fitted with pneumatic tires of the accepted size."

From a discussion of the pneumatic tire the speaker passed to the subject of spring wheels, referring to those employing spiral springs and those in which plate springs are used, and also to the efforts of inventors to design wheels in which rubber is employed within the wheel rather than on the rim. Of wheels of the latter type, he said: "I should point out that the substance which is required on which work is done in absorbing shocks of the road, in the case of pneumatic wheels, is air—a very cheap material. A good deal of rubber is required to confine it, but it was a notable advance to use air instead of solid rubber. A good many inventors have hoped to reduce the amount of rubber used by bestowing it in situations nearer the hub of the wheel. With all due deference to them, I can tell them from experience—long experience—of this matter that they cannot so economize the quantity of rubber. Rubber will only bear so much work per cubic inch, and if you reduce the quantity you reduce its life, also; you wear it out more rapidly. So that there is nothing gained by economizing the quantity of rubber, if rubber only is to be used and relied on as a spring.

Concerning Spring Wheels.

"Whilst on the subject of spring wheels, I call attention to the sketch (Fig. 1) to show how maddening are the difficulties imposed on the structures of all kinds of wheels, but especially of spring wheels, by the vagaries of road surveyors. At the top is shown a section of the 20-inch camber of a road in Hyde Park. There are 20 inches of camber in 50 feet of width, measuring from the gutter to the center. Put on that a road wagon with 12-inch broad wheels, 5 feet high, and the usual distance apart, and see what happens to those wheels and that road. The wheels only touch on the inner edges, and as a result of the whole there is a tremendous twisting strain on the wheel itself. If you attempt to make a spring wheel, you see how enormously increased are the difficulties of the designer. The dotted lines show that the action of the inner edges of the wheels is to cut away the road in a series of steps. If the camber were 4 inches, as laid down by the best road engineers, you see that it would be quite possible then to make some kind of wheel that would sit down comfortably on the surface of the road, and have no such action. Under those

conditions, spring wheels could be made to work very successfully. I do think automobile engineers have to learn a lesson from railway men. What railway man would design a locomotive without thinking of his road—the rails? Or what designer of rails thinks of designing rails without taking account of the wheels of the vehicle which is to run on them? The two are wedded together. The same engineer has to consider both, and it ought to be the same with the roads and the wheel in our case. The road surveyor must march with us and make his roads reasonably suitable for our wheels.

"There have been a large number of spring wheels designed which have a sliding or spring device very close to the periphery of the wheel. The designers of these wheels will see trouble, I am afraid. That is the point where all the dust, mud and dirt accumulate. You cannot oil them. The more you oil them the more it makes the dust stick. If you use linkage, you must put a shrouding to protect it from these external influences of mud and dust. Theoretically, the nearer these devices are to the periphery of the wheel the better, but unfortunately that arrangement is incompatible with durability.

Springing of Vehicles.

"The next point I have to call your attention to is the highly important question of the springing of vehicles— the springs interposed between the axles and the vehicles themselves.

"It is only recently that we see the three-point suspension beginning to be introduced at all commonly; but it is evident that it is the only way you can get really luxurious riding. It is so easily obtained by cross springs across the back. Why it was not introduced in the motor car until within the last few years I cannot see, but it is obviously correct; but I think the designers of cars in their anxiety to cut down weight have cut down the weight of the springs too much. A few inches of extra length, involving an extra cross section in the spring, is a most valuable addition to a motor car."

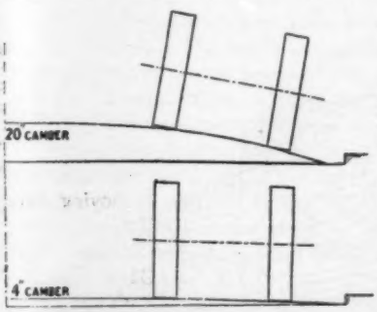


FIG. 1.

Shaping of Bodies.

The shaping of bodies of cars underneath in order to avoid dust was next taken up by Col. Crompton. He said that the British club had investigated the subject very thoroughly, though not many of the results had been published—it was very difficult to publish conflicting results. Difficulty had been found in separating the effects of the tires from the effects of the current of air passing underneath the car.

"These effects were at first confused, and wrong ideas were promulgated, luckily not widely," he said, "but I am glad to say that at last we are beginning to see daylight. We now know what is necessary to prevent the dust raised by the wheels of the car from rising high and thereby becoming the intolerable nuisance that it generally is—that the current of air which passes underneath the car should not be allowed to rise in a column at the back, or in one or more eddying columns at the back, and so pin up the dust disturbed by the wheels, and which if left alone would fall quickly to the road, and be hardly any nuisance at all. That result is obtained in a scientific manner by making the underside of the surface of the car—that is to say, the casing of the machinery on its underside—a sufficient distance from the road, and to shape it in that form which disturbs the air least (Fig. 2). The main point is that the front of the car should be a blunt nose, that it should have a cross section as shown (Fig. 3) and the end rounded. The cross section should pass away smoothly and slope gradually at the back, so that the whole of the cross section should resemble as closely as possible the modeling of a fish if divided horizontally at half its height. That is to say, you need not matter about the bow being rather blunt if the stern has fine lines. You must have fine lines there, so that the currents may pass away without eddying. A car of that cross section at thirty-five miles an hour practically raises no dust on a very dusty road.

"In this connection there is a very small point, though a valuable one, which is not sufficiently appreciated, to which I should like to refer. It is this, that you can modify your front mudguards in a simple way so as to reduce the amount of dust they disturb. That is to say, have the lower part movable so that they may be raised higher from the ground in dusty weather than in muddy weather. This really means adjustable flaps."

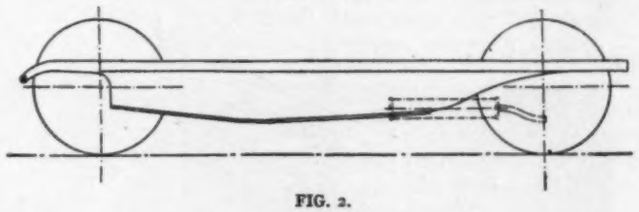


FIG. 2.

Road Shocks and Noise.

In concluding the technical portion of his address, Col. Crompton briefly discussed the question of shocks—omitting any reference to shock absorbers—and noise in relation to other users of the streets. He said: "I have told you that the older cars had higher wheels and the newer cars have lower wheels, and I am told that this is principally ruled by the price of pneumatic tires. I believe, as we increase the diameter of the wheel, so we decrease the stresses on the rubber fabric, and so we decrease the wear when we use solid tires. If we can absorb some of the larger shocks by any form of spring wheels, we may further reduce the quantity of rubber required. This is a point which designers are very apt to despise—the designing of a spring wheel of rather larger diameter than the wheels at present in use, and on which is mounted a deadening material, not so much to check any shocks to the vehicle itself or its mechanism as to prevent the outside of the rim crushing the road, and which is most marked when the iron comes direct down on to the road. By thus increasing the diameter of the wheel, I would point out that we decrease the stresses on the fabric of the rubber at the two points where it suffers most, that is, where the tire deforms itself on the road, and again as it resumes its original form as it leaves the road. By increasing the diameter of the wheel, we also find that for a given rate of speed there are fewer of these changes of form per hour, and the angular movement of the rubber at those points where the changes take place is considerably less.

"I have nowhere seen any record of experiments showing that a given weight of material can be better disposed in this way, and that if some of the shocks can be taken up by improving the design of the wheel itself, so much the better for the rubber covering.

"This wheel diameter question, whether looked at from the point of view of cost, reliability, or general convenience, or last, but not least, from the point of view of the public vehicle user in regard to the matter of noise, is the most important one before the designers of all classes of vehicle, whether those vehicles be pleasure cars, motor omnibuses, or vans which we expect to transport goods through the streets at a considerable speed. For it is evident that goods cannot be carried at high speeds with rigid wheels. No one would permit the vibration and noise that would be caused. London would be up in arms against it. The wheels themselves must be elastic, and must be provided with some class of tire which will deaden the noise."

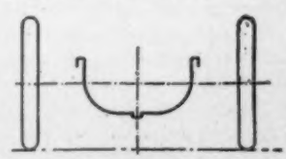


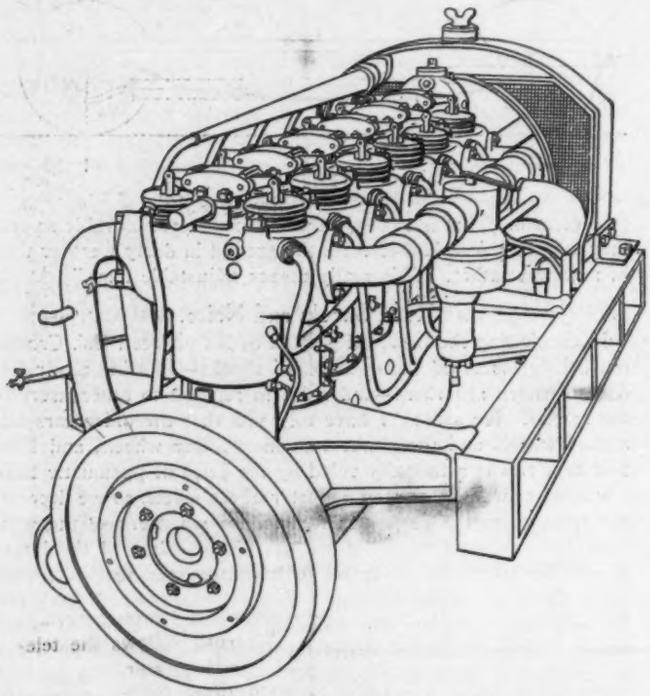
FIG. 3.

An interesting discussion followed, to which we will refer in a subsequent issue.

MERCEDES SIX-CYLINDER MOTOR.

A number of interesting, not to say surprising, features are embodied in the six-cylinder motors which are being placed in the latest racing cars built by the famous German builders, the C. Daimler company. The new Mercedes motors will develop about 125 horsepower, the cylinders having a bore of 6.28 inches and a stroke of 5.90 inches.

Perhaps the most unexpected innovation in the new motor is the abandonment of the low-tension make-and-break ignition



NEW MERCEDES SIX-CYLINDER, 125-HORSEPOWER, INTAKE SIDE.

system in favor of a high-tension jump spark system. Current is generated by a Simms-Bosch high-tension magneto. The spark plugs are inserted in the exhaust valve chambers, quite close to the exhaust pipes, and the cables are carried along between the exhaust pipes and the cylinders. The adoption of the high-tension ignition system is remarkable in view of the fact that low tension make-and-break ignition has always been a prominent feature of the Mercedes engine, and the Daimler company has brought the system to a high state of efficiency.

Each of the six cylinders is separately bolted to the crankcase; the cylinders proper are of steel, though not steel castings, and the water jackets are steel castings attached to the cylinders. Cylinder heads and valve chambers are cast integral with the water jackets.

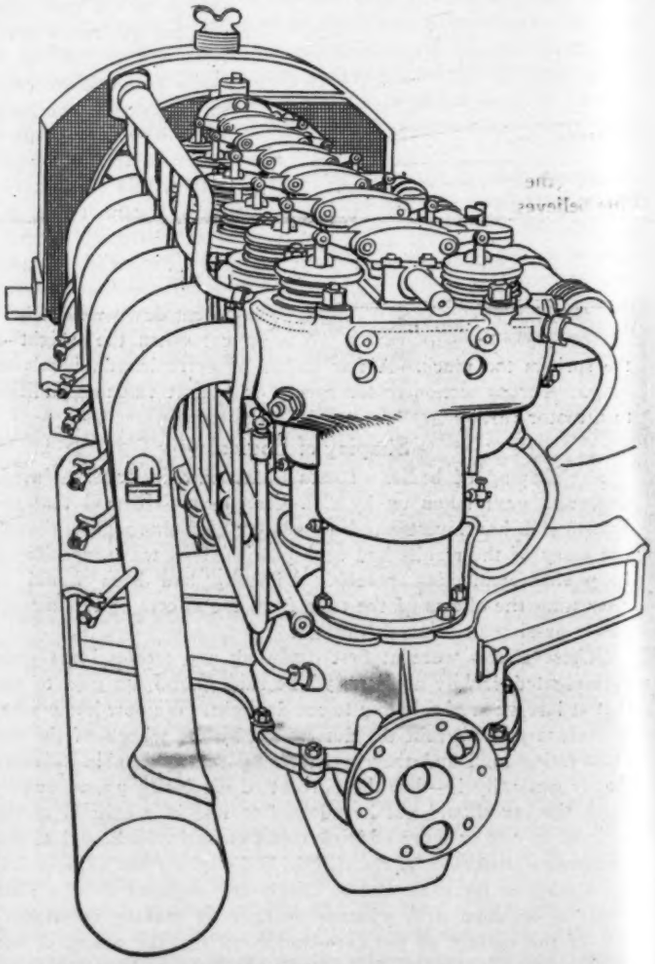
The valve-operating mechanism is very different from that of the Mercedes motors hitherto turned out. The valves are located on opposite sides of the cylinders, the exhaust on the left and the inlet on the right, and are operated by short rocker arms which, in turn, are actuated by cams on a single camshaft which extends along the tops of the cylinders, close to the heads. A small housing on the top of each cylinder encloses the cams and at the same time affords a bearing for the rocker-arm pins and for the camshaft itself. The camshaft is driven by a vertical shaft extending upward from the front end of the crankshaft. The gears, both at the crankshaft end and the camshaft end of the vertical shaft, are inclosed in an oil-tight casing. The valves are, of course, inverted, their stems projecting upward; the springs are short and of large diameter, and are held in position by the well-known concave disk and notched key arrangement. Each valve is seated in a cage held in place by studs and nuts.

In connecting up the piping between the carbureter and the inlet valves no attempt has been made to equalize the distance the gas must travel from the carbureter to the different cylinders. The arrangement is simple in the extreme; a pipe of large diameter runs alongside the cylinders on a level with the inlet valve chambers, having a branch at right angles for each valve and the single carbureter midway of its length. Corrugated expansion pieces are placed between each two joints to avoid stresses that would otherwise be set up by expansion under heat. The branch pipes are secured to the valve chambers by simple flanges with two studs and nuts in each.

The exhaust piping is also of the simplest character. From each exhaust valve chamber the hot gases are carried out at right angles, and then downward, the pipe being bent to a wide, easy sweep, into a cylindrical muffler placed horizontally below and a little to the left of the crankcase. Each exhaust pipe runs straight into the muffler, and is attached to the exhaust valve chamber by the same flange and stud arrangement as is used for the inlet valve piping.

A gear-driven circulating pump, placed at the front of the crankcase, forces the water through a cooling system that has several interesting features. The radiator is of the honeycomb type, but is made of steel throughout. Water inlet pipes are on one side of the cylinder and the outlets at the other side, the water entering and leaving just above the valve chambers.

The crankcase is made as close as possible, and is remarkably small; it is split horizontally and bolted together in the usual way. From the upper half extend four arms, of large section I-beam form, for supporting the motor from the frame of the car.



MERCEDES ENGINE, SHOWING CIRCULATION OF EXHAUST PIPES.

The new six-cylinder motors will be thoroughly tried out in June, as the three Mercedes racing cars entered for the Grand Prix race over the Sarthe circuit will be fitted with these engines. It is rumored that W. K. Vanderbilt, Jr., will import one of the new cars.

FROM KANSAS CITY TO DENVER.

By P. A. SUTERMEISTER.

The experiences of a Kansas Cityan who made the trip from Kansas City to Denver and back are worth the telling. E. H. Witte, a manufacturer of stationary gasoline engines, and hence by occupation well fitted for touring, had with him Mrs. Witte

PULLED OUT BY 13 MEXICANS, NEAR SYRACUSE, KAN.

and Misses Esther, Carrie and Julia Benz. The trip was made in a 1905 Peerless. The outfit carried included a tent and full camp equipment. The car equipped weighed some 3,300 pounds.

Traveling by easy stages, the trip from Kansas City, Kan., to Estes Park, Col., was made in six weeks. The mileage is 1,785. All the way across Kansas to Pueblo the route of the Santa Fe railroad (the East knows it as the Atchison) was followed. Mr. Witte believes, from his own experience and that of other tourists, that the route is the best for crossing Kansas. He followed it, except for a short cut-off near La Junta, Col., on the return trip,

BIG THOMPSON CANYON, SHOWING ROAD UNDER CLIFF.

also. The 858 miles back from Denver to Kansas City were made in 49 3-4 hours actual running time.

Photographs taken on the tour indicate a lementable condition of roads—and in August, too, when they should be nearly at their best. Only one perfect stretch was found, and that was between Pierceville and Garden City, Kan. For eighteen miles there the surface resembles a Florida beach, with not even a prairie dog hole. Not a tree or bush is in sight as far as the eye can reach. On this stretch the car was pushed to forty miles an hour and the going was easy.

As contrast to this was a piece near Ellinwood, Kan. Right on the edge of the railway track were mud and water for seven long miles, and they do say it is always so except when the grasshoppers form a living bridge. On meeting roads of this character it was no disgrace for the Peerless to be helped out by farmer friends, who were glad of the chance to help the travelers. Another method of extending the "glad hand" is shown in the picture near Syracuse, Kan., where thirteen Mexican laborers pulled the car out of a ditch. Creeks were forded after their beds had been explored for a footing. The stream near Cottonwood Falls, Kan., was forded twice. Its bottom was solid rock.

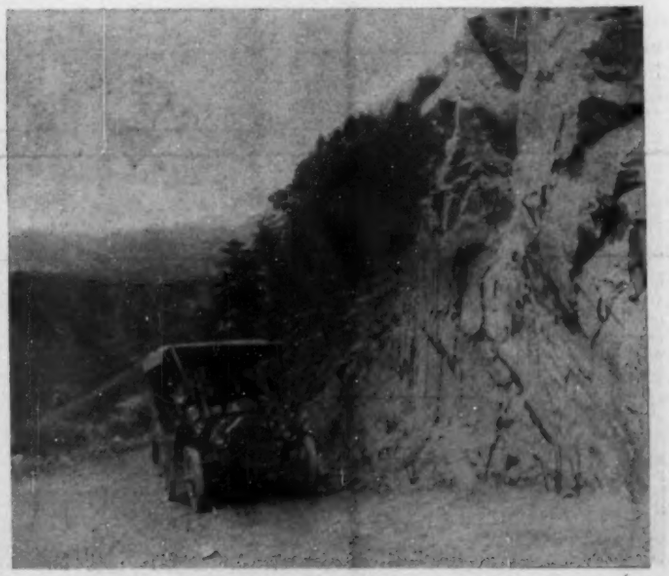
CROSSING CREEK NEAR COTTONWOOD FALLS, KAN.

Farther on, near Dodge City, the tourists encountered swamps which served the purpose of roads. The road follows the telegraph poles, although it cannot be seen for the water.

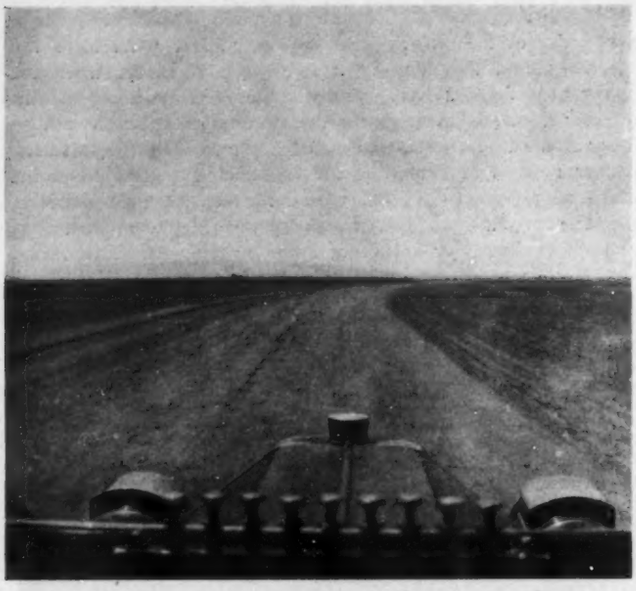
Speaking of Dodge City, it is a good thing to remind the traveler across Kansas to and from Denver that he must carry water from Dodge to Pueblo or Denver, each way. There is no chance to replenish the supply between these two points.

After Denver the tourists took in Estes Park, with all its Colorado scenery. An unusual picture was obtained in big Thompson Canyon, the car being photographed as it was ascending the winding road up the cliff.

On this trip, Mr. Witte kept an accurate record of his mileage, running time, stops, repairs, and the like. He carried no spare tires when he started, but wired for two while on the way. They



CLIFF DRIVE COMING BACK FROM BEULAH, COL., TO PUEBLO.



EIGHTEEN MILES OF THIS, PIERCEVILLE TO GARDEN CITY.

were expressed to him promptly and he was thus saved carrying them for long stretches.

Starting from Kansas City with the idea of making the trip to Colorado a pleasure jaunt, a slow pace was set and so it was six weeks before Estes Park was reached. The distance was 1,785 miles. On the run 238 gallons of gasoline were consumed. Stops were made at a number of places, where friends were visited and a number of delays were caused by bad roads and the necessity for repairs.

Now and again there were strenuous times on account of rains, and on the outward bound trip about 200 overflowed places, caused by irrigation ditches, had to be navigated.

The return trip was made in a hurry. The actual running time was only 49 3-4 hours from Denver, and the gasoline consumption 74 gallons. The distance was 858 miles. On the return 24 ditches of water were crossed in Colorado and 11 in Kansas, all caused by the neglect of farmers and road overseers. Otherwise the roads were fair except the last day, between Strong City, Kan., and Kansas City, when it rained slightly. Notwithstanding this drawback, 177 miles were made in the last day.

Mr. Witte does not regard his trip as much of an achievement.

SEVEN MILES LIKE THIS, ENTERING ELLINWOOD, KAN.

THROUGH NEBRASKA MUD.

MILFORD, NEB., April 7.—After four days of smooth running over the level Nebraska river roads, we ran into the rain belt at Hastings, and from there to this point the trip has been a continuous struggle through mud and water. Had the rain been delayed twenty-four hours, the *Mountaineer* would have been among the cars to be exhibited at the Omaha show. As matters now stand, it looks as though it would require a week or ten days to make the seventy-five mile trip from Milford to Omaha.

At Sterling, Colo., and at North Platte, Kearney, Grand Island and Hastings, Neb., the local auto enthusiasts were awaiting us.

This makes my third trip through Nebraska by automobile, and each time I have found the mud a serious obstacle. While it is not the bottomless adobe of New Mexico, it is deep enough to bury axle, muffler and differential every few miles. Along the main traveled highway, by resorting occasionally to windlass and cable, we were able to make slow progress. Travel by air ship or boat is preferable in Nebraska after a twenty-four hour rain. The country is so flat that the water remains on the ground for days after a hard shower.

This country differs greatly from the Far West, however, as every stream is bridged and we find a farmhouse on an average

PULLED OUT BY OUR FRIENDS OF THE ROAD AT FOWLER, COL.

every quarter mile and a city or town every seven or eight miles. The horses, however, are much more easily frightened and less skillfully handled than the bronchos of the Far West. Although our muffler was carried away by the deep mud the second day out of Hastings, we succeeded in running past all horses thus far met without causing any serious accident.

All through Nebraska we are coming across automobiles of various makes, and in all the small cities and towns the more enterprising farmers own runabouts and touring cars.

We have been told that the bridges are down all along the Platte between here and Omaha, and it will be necessary to cross the river by boat at Plattsmouth or retrace our way to Columbus in order to cross the river. There are several good railroad bridges, however, and as a last resource we will run the Reo across on one of these. PERCY F. MEGARGEL.

An automobile driven by W. P. Cronan, of New Haven, on Sunday, April 8, tried to emulate old General Israel Putnam's horse, which won fame in Revolutionary days by plunging with its rider down the steep flight of natural stone steps at Greenwich, Conn. The steering gear broke and the car went through the iron rail by the roadside which overhangs the historic spot. The hind wheels luckily held in the railing, and Mr. Cronan clung to the steering wheel until he was rescued.

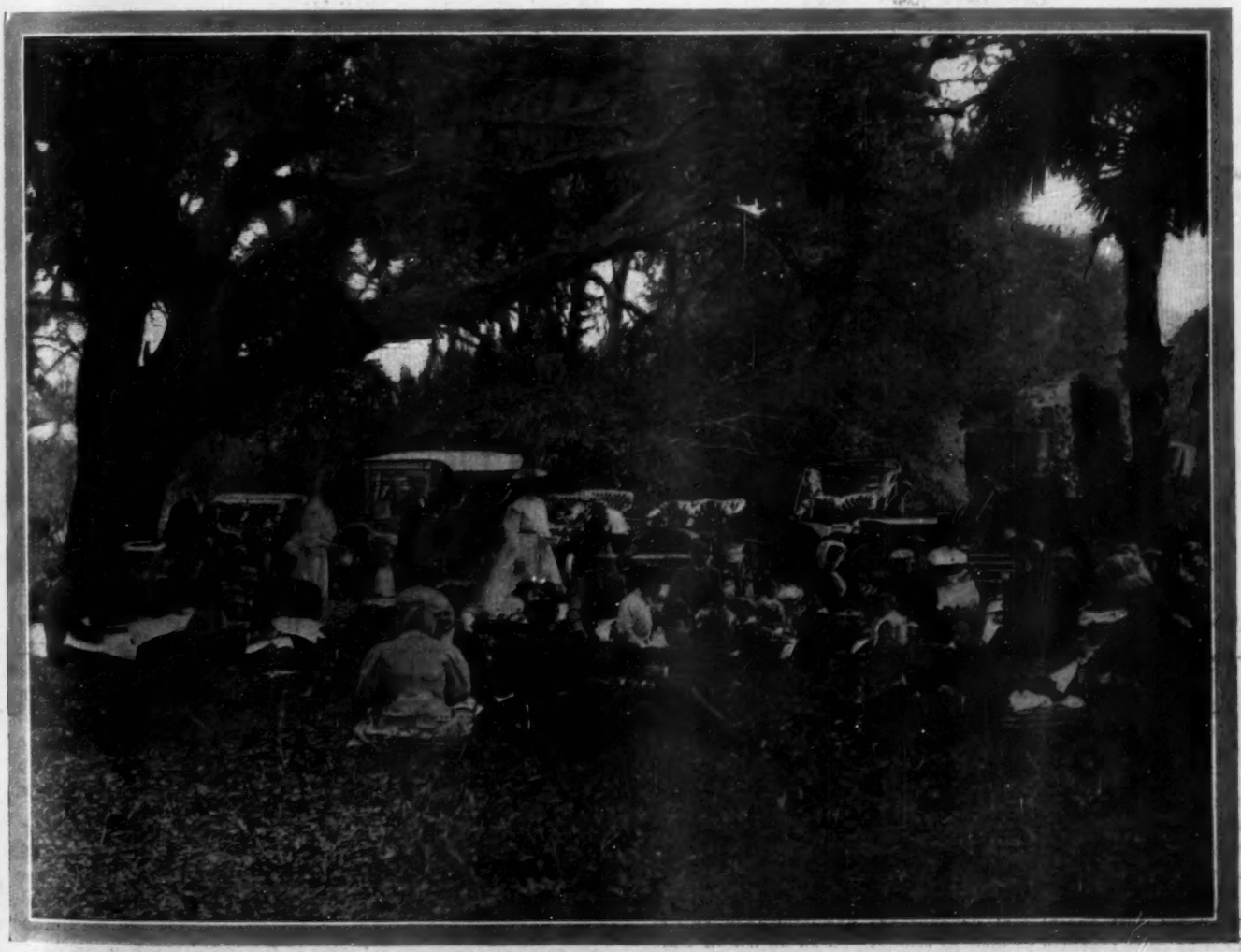
FLORIDA AND THE GOOD ROADS QUESTION.

RUINS OF OLD SUGAR MILL.

FLORIDA is thoroughly awakened to the necessity of good roads, and it intends to make itself so attractive from the automobilist's point of view that the Eastern automobile tourist in wintertime will visit the more convenient "Land of Flowers" rather than make the long trip to California, where many miles of excellent highway have been constructed. A road from Jacksonville to ancient St. Augustine, then to lovely Ormond, through picturesque Daytona, and continuing down to tropical Miami, is the dream of the future that promises to become an early reality. The many miles of unlimited speed automobiling possible on the Ormond-Daytona beach cause many automobilists to visit these two places. Not far from Ormond, on the road to St. Augustine, are the old Bulow ruins, located on Bulow creek. The Bulow plantation was once one of the best equipped in Florida and possessed over 300 slaves. From its landing, before the Seminole war in 1835, the product of a thousand acres of sugar cane and two thousand acres of Sea Island cotton was taken in barges down the creek to the head of the Halifax, thence to Mosquito Inlet, there transshipped to schooners and taken to Charleston. The Bulow ruins are much visited by the tourists from Ormond-Daytona.

One of the projected improvements in that vicinity will be a new $20,000 bridge that will span the Halifax river from Port Orange to the beach, a distance of a mile. This will make it possible to go from Daytona to Port Orange by way of the beach and return on the county road. The bridge will be made of cabbage logs and something similar in style to the bridges at Daytona, of which there are three across the Halifax river. The contract for the bridge will be let in the next ten days.

If it were possible, an army of automobilists every winter would make the tour from the North to Florida, but when one ventures south of Washington the highways which he encounters are enough to cause him to give up the struggle in despair. Southern automobilists deplore the absence of a national road to their country, for in the summer time they would use it in driving to the North. An effort is now being made to build a road worthy of the name between Jacksonville and Savannah, and it is hoped that this soon will be extended to Richmond and then to Washington, from which city one can drive to Baltimore and Philadelphia with some degree of comfort, though this route is susceptible of great improvement.

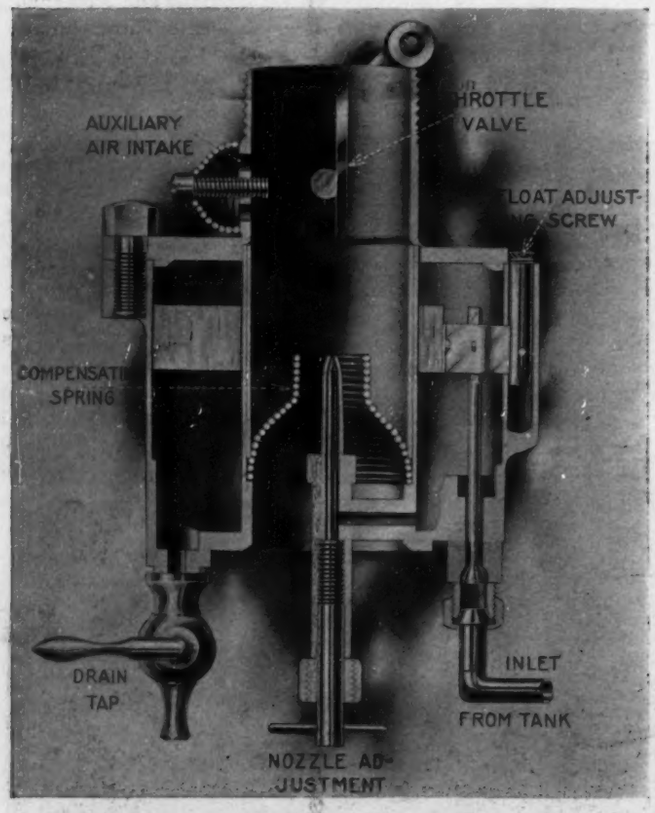


AN AUTOMOBILE PARTY FROM THE HOTEL ORMOND AT THE BULOW RUINS, SATURDAY, MARCH 31, 1906.

A NEW CARBURETER.

An automatic carbureter, in which the compensating air inlets are of novel form, has been invented by Charles T. Gaither, and will be placed on the market in the near future. The construction of the carbureter is clearly shown in the accompanying sectional engraving. It will be seen that the float chamber is of the annular type, surrounding the mixing chamber; the float is of cork and is, of course, also annular. The gasoline inlet valve and the float-adjusting screw are clearly shown and need no description, and the same is true of the central spraying nozzle and its adjusting needle.

The manner of regulating the air supply is the point of novelty in this carbureter. Around the spraying nozzle is a wire spring, with its coils so closely wound that they are normally pressed together, allowing the same area of passage for the air as would a sheet-metal cone with top and openings of the same diameter. When the speed of the engine increases to a point where the flow of air through the cone is insufficient for the amount of gasoline drawn from the nozzle by the strong suction, the convolutions of wire are slightly separated by the air current, thus admitting more air, which mingles with and dilutes the gasoline-laden air which has passed the nozzle. A very slight spreading of the spring is sufficient to largely increase the flow of air, and the spring automatically closes upon itself when the engine slows



GAITHER AUTOMATIC COMPENSATING CARBURETER.

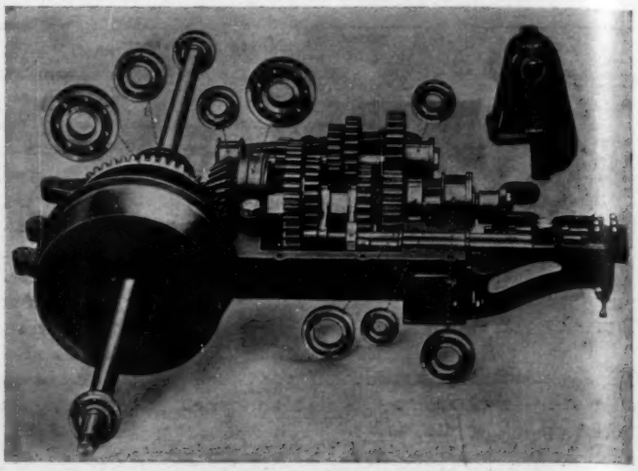
down and the suction decreases. The spring is about two inches in diameter at the base, a little more than one-half inch in diameter at the top, and is made of nickel-plated steel wire one-sixteenth of an inch in diameter. A liner fitting closely inside the mixing chamber holds the spring in position by the last three or four coils at the bottom; the liner itself is held in place by the upper part of the carbureter containing the throttle and the auxiliary air intake.

The auxiliary air intake is made on the same principle as the main air inlet except that its coils are normally open and are held as close together as may be required by an adjusting screw. The throttle is a plain disk in the upper part of the chamber.

THE STEARNS TRANSMISSION.

An interesting example of the application of ball bearings to a sliding gear transmission is shown in the accompanying engraving made from a photograph of the transmission used in the 1906 Stearns car, manufactured by the F. B. Stearns Co., of Euclid and Lakeview avenues, Cleveland, O.

The location of the ten ball bearings used is clearly shown in the engraving. The bearings are of the D. W. F. type, manu-



STEARNS BALL-BEARING SLIDING-GEAR TRANSMISSION.

factured by the Hess-Bright Co., and are of sizes best adapted to their loads. Shafts and gears are all made of Carpenter special chrome nickel steels, hardened and tempered; the Stearns company states that a test piece taken from one of the shafts showed a tensile strength of 220,000 pounds to the square inch.

The transmission is operated by a selective lever working in a gated quadrant, and gives four speeds forward and a reverse, the latter being engaged by throwing the lever into a separate slot in the quadrant, beyond the forward speed positions. Drive is direct on the high speed. There are two sliding units on the squared secondary shaft, each consisting of two gears. The spur gears are all of five pitch and the faces are from 1 1-8 to 1 1-4 inches wide. The bevels are of the same pitch.

The ball bearings are, with one exception, inclosed in oil-tight casings. The brakedrum on the jackshaft is large—11 1-8 inches in diameter and 3 3-4 inches face—and is of forged steel. The gearcase is of aluminum and is so made that it can be assembled complete before attaching to the frame. All the parts are held together by finished steel bolts, no studs being used.

TO LICENSE POWER BOATS.

WASHINGTON, D. C., April 9.—There is some opposition being manifested by owners of motor boats in Long Island Sound to the bill recently passed by the Senate, and which has been favorably reported to this House by the Committee on Merchant Marine, requiring a license for motor boats carrying passengers for hire and placing them under government supervisions. The bill specially provides for the exemption of boats in the fishing trade. The opponents of the bill claim that a large number of boats in the Sound carry passengers for hire only during a short period, and are then converted into pleasure craft, and that the law is inconvenient and unnecessary. The National Association of Engine and Boat Builders has indorsed the bill in its present form as it regards the safeguarding of the passenger service an excellent measure.

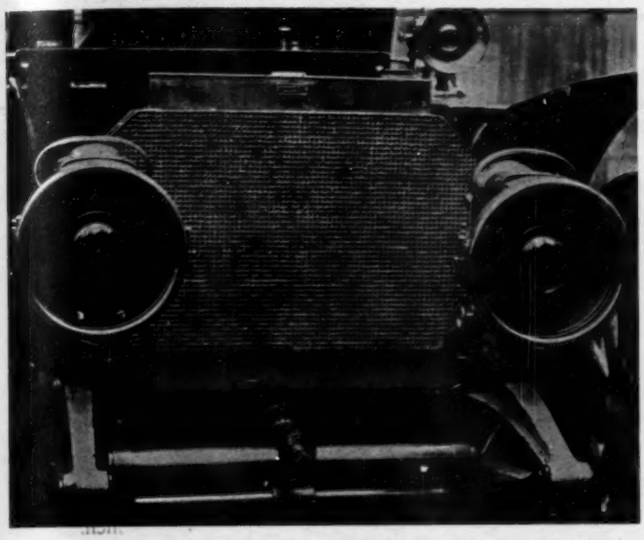
At the last committee meeting of the A. C. G. B. I. it was resolved to appoint a committee to work out rules for a new international race to be placed before the congress of automobile clubs at Paris in June. Should Mr. Bennett consent, the Gordon Bennett Cup might be assigned to this race, which would be an old friend in a new guise.

MOTOR STARTING DEVICES.

By RENE M. PETARD.

Much interest has been manifested both in France and abroad in automatic motor starting devices put in operation from the driver's seat, so as to avoid the necessity for getting out and cranking the motor in the usual way. The reader will doubtless recall that in the recent French competition for these devices first prize was taken jointly by the Mors and Cinogene starters, and second prize by the Lemale system.

In the Mors system a large pump cylinder, the piston rod of which carries a handle of convenient size and shape, is suitably



PEUGEOT CAR FITTED WITH CINOGENE CARBONIC ACID GAS STARTING MOTOR.

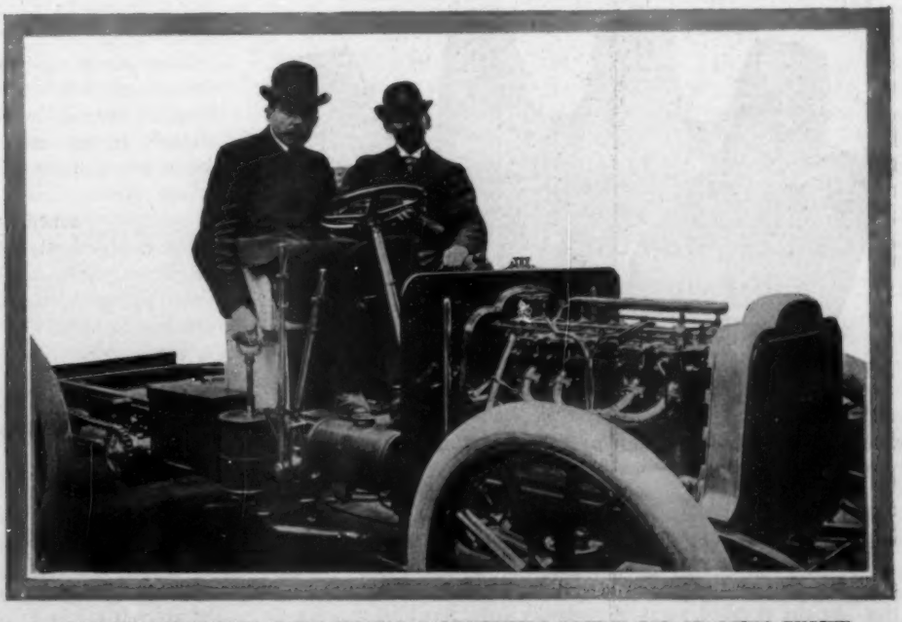
fastened to the frame side, beside the driver and behind the operating levers. The object of this pump is to compress air. On the dashboard, on the passenger's side, is fitted a small, bronze, oblong tank, forming a simplified form of surface carbureter. On the exhaust side of the motor, and screwed in the exhaust valve plugs, are taps of the conventional compression tap system, which are respectively connected by a short copper pipe to a large main copper tube, plainly seen lying prominently on top of the engine in the accompanying engraving, and which goes to the before-mentioned carbureter. Lastly, the car is fitted (in addition to its regular magneto make-and-break ignition) with an ordinary accumulator and coil high-tension ignition system. The operating handles of the small compression taps before mentioned are interconnected by a light, flat steel rod, which can also be seen in the engraving and which is actuated by a small handle on the dash.

To start the motor the process is as follows: All taps and bypasses being opened, the driver gives a few strokes of the pump, air is driven from the latter through the carbureter, whence it goes to the cylinders, the explosion chambers of which it fills with mixture, "said" to be under whatever pressure (the word *said* will be explained later) the driver may desire, the taps are then closed and the engine is started on the switch in the usual manner, the cylinder nearer to its normal firing point giving the first impulse. When the engine has only been left standing a short time the pumping process is evidently not necessary.

Coming now to the reason why the word *said* was used in the foregoing, the writer has not realized yet how any pressure could be had above atmospheric in any of the cylinders which communicate with each other through the main lead pipe, if any one of them has its exhaust valve opened, as will probably be the case in most instances. This objection the Mors people did not see fit to answer, check valves being evidently out of the question, since if they were used they could not change the conditions in any way except that the pressure obtained would be less than the atmospheric. At any rate, the device works and has won a prize, so every one should be satisfied.

GAS TANK ON SIDE OF PEUGEOT.

In the Cinogene apparatus the principle evolved is entirely different. In this apparatus, which is mounted on a Peugeot car in the engravings, the action is external and acts upon the starting crankshafts as the hand cranks would do. For this purpose this shaft carries a small spur pinion mounted on a ratchet as is a bicycle flywheel. This spur pinion meshes with a rack, forming the piston rod of a double-opposed horizontal liquid carbonic acid motor, disposed as the engraving clearly shows. By the driver's side, or in any convenient position where its stop valve can be operated, a carbonic acid flask, such as



MORS CHASSIS FITTED WITH SPECIAL CARBURETING DEVICE FOR STARTING ENGINE.

can readily be procured almost anywhere in France, is fitted, and the fluid contained therein is used to actuate the starting motor by simply opening the valve. This system is most certain in its action, but it probably would not be satisfactory in any country where carbonic acid under pressure is not a commercial article. Compressed air would evidently also do, but could not be stored as conveniently in large enough quantities to permit touring for long periods without recharging. The obvious advantage of this system is that it is adaptable without change to a motor fitted with make-and-break magnetos without any other ignition system.

In the "B. R." system, which is almost an exact reproduction of the Lemale, mechanical means alone are resorted to. The operation in principle is as follows: A strong spiral spring is wound by the repeated action of a pedal or of a side lever and suddenly released when it is desired to start the motor.

The Renault house showed on their town chassis a self-starting system which did not compete in the competition, but which, although rather complicated, is of interest. It is only used on the 10-horsepower four-cylinder car. In this apparatus the rear-most cylinder of the engine carries in its combustion chamber a check valve which, when the engine is working, constantly keeps a small tank (bolted to the frame under the driver's seat) full of burnt gases at the maximum explosion pressure. The gas thus stored under pressure in the tank is used to actuate a small rotary compressed air motor, the shaft of which carries a small spur pinion which can be brought in mesh with teeth cut all around the periphery of the motor's flywheel, thus turning the latter over when it is desired to start it.

The consideration of the complication of these different systems makes one wonder if the common type of starting crank would not have been called an improvement had cars been fitted with such appliances from the beginning.

SPECIAL AUTO STEELS.

Special steels of the highest quality are required for various parts of the automobile, and the manufacturer no longer seeks to convince the public of the excellence of the material he uses by referring to it as "tool steel," though at one time tool steel was about the high-water mark in constructive materials. Now the great steel makers are turning their attention to the matter, and a variety of steels, each made with a view to being used for a certain class of work, is turned out; and not only is definite information given as to their physical qualities, but the makers, as a rule, guarantee the steels to come up to a fixed standard. One of the concerns making special automobile steels is the

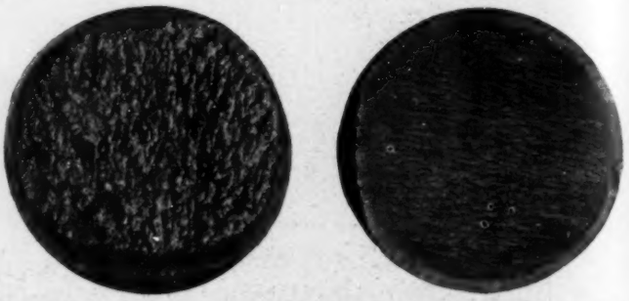
SEGMENT OF CASE-HARDENED GEAR.—TEETH SHOW DEEP CEMENTATION.—INTERIOR ROUGH.

famous German house of Krupp, represented in this country by Thomas Prosser & Son, of New York and Chicago.

Krupp steels are made for moderate stresses, for heavy stresses and for extraordinarily heavy stresses; and the work to be done by the finished parts is carefully considered in making the steel. For instance, a gear in the transmission is subjected to constant friction on its teeth, and in order to resist wear the teeth should be as hard as steel can be made. Very hard steel is brittle, however, and as sudden and extremely severe shocks are frequently transmitted through the gears, a gear hardened in the ordinary way would break up in a very short time. Therefore, the special steel for gears is made so that it can be

MILD MOTOR-CAR STEEL.—THREE TURNS IN TORSION TEST.

hardened on the surface, the hard "skin" being of a depth that is regulated by the composition of the steel and the treatment in hardening; but the interior remains comparatively soft and extremely tough, having great tensile strength. Thus the two qualities of hardness and toughness are combined. Krupp gear



FRACTURES OF CASE-HARDENED BARS OF SPECIAL NICKEL STEEL.

steels are made both in plain steels and in nickel steels, the tensile strength ranging from 75,000 pounds to 124,000 pounds to the square inch, according to the requirements of the case. Nickel steels of special quality, having tensile strengths up to 232,000 pounds to the square inch, are made for crankshafts and for axles, steering knuckles and other parts upon the integrity of which the safety of the occupants of the car, and frequently their lives, may depend.

A striking test of the extreme toughness of the mild or soft steels is made by twisting a square bar until it breaks. A piece of plain mild steel was twisted until it broke; it took 22 turns to cause a fracture. A piece of nickel steel of the same dimensions broke only after 29 turns, and when the test was over the pieces looked like round bars with shallow threads cut on the surfaces. Special hardened spring steels show tensile strengths of from 118,000 pounds to 224,000 pounds to the square inch, and elastic limits of from 73,000 pounds to 203,000 pounds to the square inch.

Like almost anything else that is very highly developed, special steels must be handled with the most extreme care. Explicit instructions for forging, hardening and annealing are given by the manufacturers, and failure to do the work in exactly the proper manner will result in the loss of the highest qualities of the metal.

For a strenuous pastime autoing in Alaska is said to be the real thing by a man who has tried it. J. E. Newman of Nome has been driving a car in the chilly north for A. E. Boyd, manager of the Alaska Telephone and Telegraph Company. Mr. Newman covered several thousand miles this season in a country where there exist no roads, where the climatic condition is opposed to driver and machine and where there are no garages or conveniences which make automobiling pleasant. An automobile is a great curiosity up there. The Eskimos never seemed to become used to the machine. They considered it a strange god of the white man's which he had subdued to do his bidding and which had something to do with the 'talk wires' of the telephone lines, which the car nearly always followed.—Exchange.

Up to the present 5,504 automobiles have been licensed in Pennsylvania. At $3 per license, the Department of Automobiles, it is estimated, will be more than self-supporting.

THE GRAND PRIX DE FRANCE.

PARIS, April 2.—There is much satisfaction in Paris automobile circles at the news which was made known to-day that cable messages were passing between W. S. Hogan, representative of the Automobile Club of America in Paris, and the officials of the Automobile Club of France, with a view to the entry of an American team for the Grand Prix race.

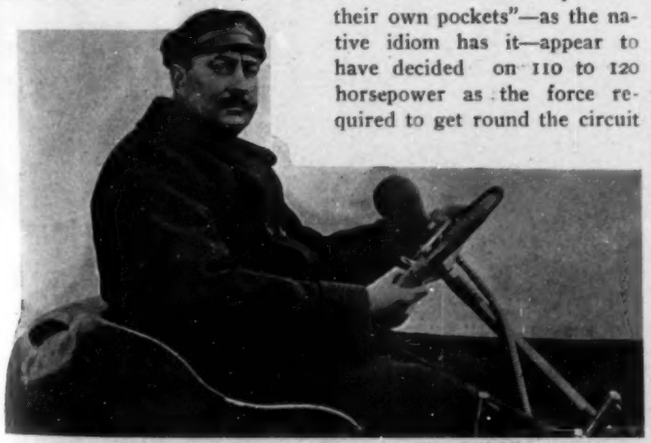
Should American drivers be sent over, at least six nations will be represented in the race, namely, France, Germany, England, Italy, Austria and America. Belgium and Switzerland are doubtful starters. No foreign entries have yet been received, and the French cars engaged

BARILLER, OF THE BRASIER RACING CONTINGENT.

stand at twelve, being three each from Brasier, Panhard, Darracq and De Dietrich factories.

The entry list, however, does not close until April 30 at ordinary fees ($1,000 per car) and on May 15 at double fees, and there is thus no hurry, more especially as owing to the recent fall of the government permission has not yet been officially received to hold the race. It is for this reason that actual work has not yet been commenced on the circuit, though all preparations have been made for recharging the road, erecting stands and fixing up stations, and as soon as the decree has been signed large bodies of workmen will commence operations at spots already allotted to them.

In view of the possibility of American starters, the distinctive features of this race may be pointed out, in order that cars totally unfitted for the circuit may not be sent over, as was the case in the last European race in which the United States was represented. French builders, who know the circuit "as they know their own pockets"—as the native idiom has it—appear to have decided on 110 to 120 horsepower as the force required to get round the circuit



LE BRUN, A NEW BRASIER SPEED PILOT.

in the least possible time. Exceedingly fast cars, with low center of gravity, are being constructed, for the twenty miles straightaway level runs will allow of the highest speeds.

Cooling apparatus is receiving special attention, and extra large fuel tanks are being fitted in order that there may be few or no stops for refilling tanks. Special provision will be made on the French racers for carrying spare tires; in some cases an increase of wheelbase is given in order to give carrying room.

Further, the driver and his assistant must be both expert mechanics and skilful tire repairers, for no one but the two engaged to drive the car will be allowed to approach it for any reason whatever from start to finish. Although the circuit for the most part consists of straight stretches of road, there are a few difficult turns, and foreign teams should therefore arrive on the ground sufficiently early to leave ample time for practising on the course.

BAY STATE MEET ON MAY 30.

BOSTON, April 9.—At the April monthly meeting of the directors of the Bay State Automobile Association, it was definitely decided that the association would not hold a hill climb on Patriots' Day. Some weeks ago it seemed almost certain that the association would conduct such an event, but at the meeting it was pointed out that the day has generally been considered as belonging to the Massachusetts Automobile Club, and that the Bay State ought not to appropriate it. The Massachusetts club, however, has made no plans for an event on Patriots' Day, and therefore it is likely there will be no contest, which will be a severe disappointment to local enthusiasts.

The Bay State association will probably hold a run on the holiday. The runs and tours committee reported that it was making plans for a repetition of last year's trip to Rye Beach, and that this run probably would be held June 17 and 18.

Though it has given up the

BARAS, THE VETERAN, NOW A BRASIERITE.

hill climb, the Bay State association is taking vigorous steps toward the promotion of the race meeting on Memorial Day, and a committee has been appointed consisting of President L. R. Speare, Charles E. Fay, J. H. MacAlman and F. A. Hinchcliffe. This committee has elected J. C. Kerrison as manager of the meeting. The races will undoubtedly be held at the Readville track, although the owners of that track have placed a very high rental upon it. The surface of the oval will undoubtedly be oiled to insure safety.

F. A. M. ENDURANCE RUN.

ROCHESTER, N. Y. April 7.—A. D. Fisk, president of the Rochester Motorcycle Club, has been notified by Henry J. Wehman, of the Federation of American Motorcyclists that this city has been selected as the terminal of the organization's annual endurance run and meet. The riders will leave New York on July 2 and are expected to reach Rochester July 3. July 4 will be given to a tour of the lake resorts, and the afternoon will be devoted to hill-climbing contests. July 5 a road race will be held, and in the evening a business meeting and election of officers of the F. A. M. For the business meeting delegations from all over the country are expected. The last day will be taken up with track races and the meet will probably be closed with a run to Buffalo.

WINTER
MAKES WAY
for SPRING

DELAHAYE MARINE MOTOR.

One of the interesting exhibits at the recent motor boat exhibit in Paris was a four-cylinder 50-horsepower Delahaye motor, with reversing gear, mounted on steel beams and intended for installation in a fast cruiser or a moderate-powered racing boat.

The engine is much the same as the last year's engine built by this firm, and has individual cylinders bolted to a common crankcase in the usual way, the crankcase being designed with a view to installation in a boat. The inlet valves are automatic and open into the tops of the combustion chambers; the exhaust valves are in pockets on the left-hand side of the engine. The most notable features of the engine are the large inspection openings, covered by plates, in the water jackets, and the novel and neat arrangement of the inlet piping. It will be seen, if the accompanying engraving is closely examined, that two large sections of each water jacket, one at the front and the other at the rear side of each cylinder, are left open when the cylinder is cast. These openings are covered by the plates whose edges can be seen in the engraving. The plates are of copper and are fastened with screws. The arrangement of the inlet piping is clearly shown and needs no explanation. The length of piping between the carbureter and the cylinders is the same for all cylinders, the piping is simple and direct, and is of large diameter. The crank may be inspected through individual inspection holes, covered ordinarily by plates; these holes seem decidedly small for convenient use. The motor is started from the after end by an oscillating lever, the motion of which is transmitted to the forward end of the crankshaft through a longitudinal shaft running above the arms of the crankcase, a sprocket and chain and a set of gears; the lever, shaft, sprocket and chain are clearly shown in the engraving. The levers for controlling the motors are attached to the crankcase close to the rear cylinder; one lever acts on the throttle, through a governor, and the other regulates the ignition timing. The current is generated by a gear-driven high-tension magneto.

The reversing gear is of the planetary type, and part of the rotating casing is bolted to the large flywheel. The reverse is engaged by tightening a brake band, consisting of a steel cable with friction blocks, on the casing of the gear, in the same way as is done in automobiles with planetary gears. Behind the reverse gear is the thrust bearing, and back of this the universal joint for coupling up the propeller shaft.

THE RACING AT MONACO.

Cable reports of the auto boat racing at Monaco, which began last Sunday, announce *Mendelssohn III.* as winner of the first race, for cruisers in the six-meter class, and *Antoinette IV.* as winner against three competitors in the eight-meter class for racers. Pitted against her were *Seasick* (Italia engine), *Rapiere* (Panhard), and *Volauvent* (Hotchkiss). The *Antoinette* has a Levavasseur engine.

Although *Seasick* rapidly overhauled *Antoinette,* she developed a faulty clutch, and *Antoinette* won easily from her other opponents, showing an average speed of about forty-five kilometers (twenty-eight miles) an hour.

The day was magnificent and the terrace in front of Monte Carlo was black with excited spectators.

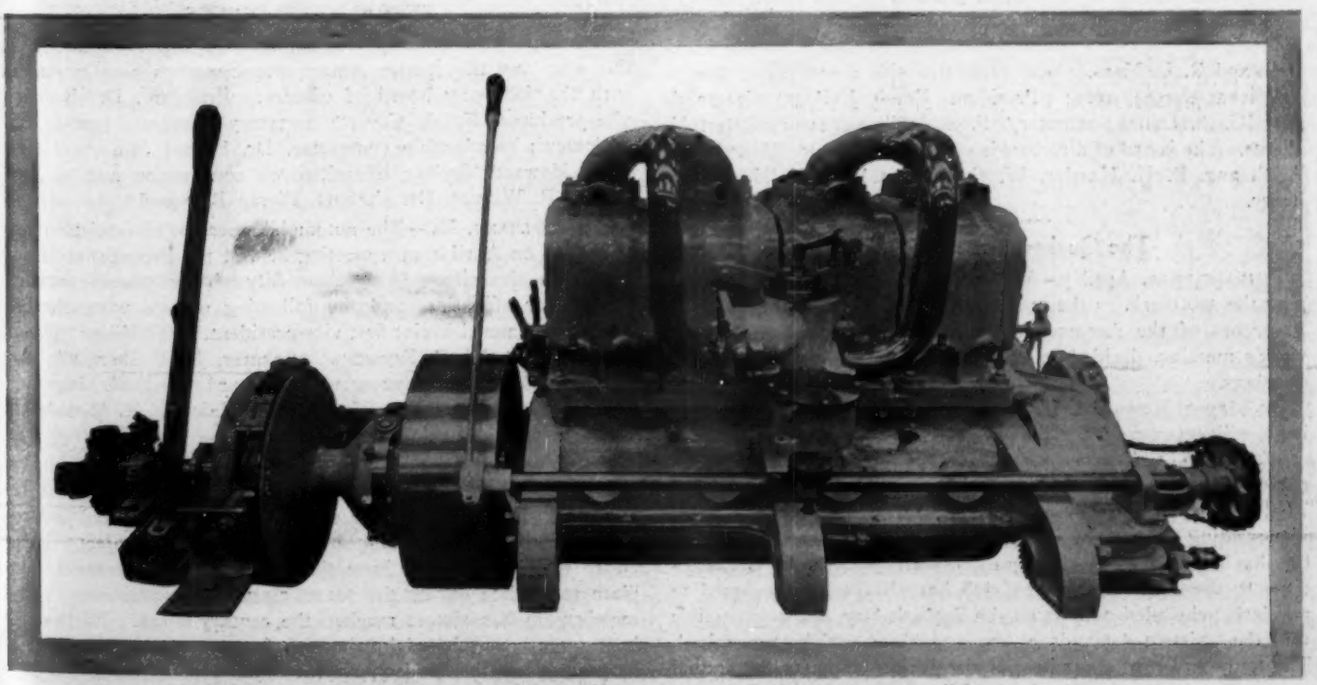
Better opportunity for getting a line on the respective merits of the different craft was afforded on Monday, when the race for twelve-meter racing boats was captured by the *Yarrow Napier,* owned by S. F. Edge and representing England. The Italian entry, *Fiat XIII,* finished second, after being delayed half an hour; *Martini III.* broke down and was towed to port. Considerable excitement was caused by a man falling overboard from *Siola,* but he was rescued and the boat was abandoned.

The victory of the *Yarrow Napier* silenced the critics, who before the races found fault with her flat design and noisy engines.

BETWEEN WASHINGTON AND BALTIMORE.

WASHINGTON, D. C., April 7.—For a number of years the automobilists of Washington and Baltimore have been endeavoring to securet he construction of a boulevard between the two cities, and their efforts have at last been crowned with success. The Maryland legislature has passed a bill appropriating $90,000 for the work and Governor Warfield has approved it. The money is to be expended at he rate of $30,000 a year, and the work will largely be done by the inmates of the Maryland house of correction. The work will be under the direction of the Maryland State Highway Commission.

Under the terms of the bill the boulevard is to be of macadam and sufficiently wide to meet all the requirements of a much traveled road. It will be known as the State Road No. 1, and will pass through Prince George, Howard, and Baltimore counties. The route will be surveyed at once, and the boulevard will be so laid out that all railroad crossings will be eliminated.



DELAHAYE FOUR-CYLINDER, 50-HORSEPOWER ENGINE AND REVERSING GEAR FOR USE IN AUTO BOAT.

AUTOMOBILE CLUBS ARE ACTIVE THESE DAYS.

MINNEAPOLIS, MINN., April 9.—Local automobile enthusiasts are discussing the advisability of forming a state association. It is the general opinion that such an organization would meet with the hearty support of every automobile owner in Minnesota, and it is thought that such an association will be perfected before the end of the summer.

It is expected that machinery will soon be put in motion to have smaller clubs organized in all the towns where there are a dozen or more machines, each of which would take out a state charter. At present there are only three well organized associations in the state. The two larger clubs are located in the Twin Cities, and one was recently organized in Duluth.

New Haven to Have a Club.

NEW HAVEN, CONN., April 9.—That this city is soon to have a large and flourishing automobile club has been settled beyond a doubt. Early this week circulars will be placed in all the local garages which all who favor the formation of an auto club will be asked to sign. Though the largest city in the state New Haven has never had an up-to-date live auto club. Some years ago an effort was made in this direction, but after a short existence the organization fell through. Many autoists here favor a state club, but it is generally conceded that a state organization can only be organized as a consequence of and dependent on the general formation of city clubs throughout the state and as a sequel to the spirit of enthusiasm which would result from the formation of auto clubs in all the cities.

The Indiana Motor Club.

INDIANAPOLIS, IND., April 9.—At a meeting held at the English Hotel in this city April 6, the organization of the Indiana Motor Club were perfected and officers were elected. The club takes the place of the old Indianapolis Launch Club, the membership of which was limited to owners of motor boats while the new club includes owners of automobiles.

The erection of a clubhouse to cost $5,000 will begin in two weeks. It will be built at Broad Ripple Park, north of the city, where through the influence of the White City Amusement Company it has secured a frontage of 300 feet on White River. The clubhouse will possess a complete garage on the grounds. The building committee is composed of E. A. Strong, Jr., Bruce Maxwell, and R. L. Maas.

Officers elected were: President, Frank J. Barr; vice-president, G. A. Deitch; secretary, F. B. Willis; treasurer, Bert N. Pierce. The board of directors is composed of Bruce Maxwell, E. A. Strong, R. H. Hassler, W. G. Wall and Dr. E. H. Katterhenry.

The Quakers Are Now Moving.

PHILADELPHIA, April 9.—With the total membership just topping the 300 mark, as the result of recent additions, the board of governors of the Automobile Club of Philadelphia, at its last week's meeting, decided to redouble its efforts to bring in new members.

On May 9 Howard Longstreth, one of the club's oldest members, will entertain his clubmates at the Corinthian Yacht Club at Essington. The committee on tours and runs has called a moonlight run on that date, and the return to be by moonlight. That committee is again seriously considering the advisability of inaugurating a series of Sunday runs, many requests along that line having been received recently, especially from the late additions to the club roster. The club has always been opposed to regularly scheduled outings on the Sabbath Day, but it is possible that the insistent demands of the new blood will be recognized. The tours and runs committee is also laying plans for the annual contest for the Brazier Cup in the fall.

A communication having been received from several members asking the club to go on record as opposed to siren horns, the matter was turned over to the legislative committee.

Chicagoans to Have Endurance Tour.

CHICAGO, April 9.—Ralph Temple has offered a cup to the Chicago Automobile Club which will be awarded to the winner of the proposed endurance tour. No conditions are stipulated. The club will arrange the details of the race and the awarding of the trophy. The C. A. C. has become interested in the tour and will do all in its power toward making it a success. The contest will extend through three states, Illinois, Indiana and Wisconsin, and will be for a distance a trifle under 1,000 miles.

Ground will be broken for the new structure of the Chicago Club at Plymouth court and Jackson boulevard, in a few days. The plans of Architect Marshall, as revised, have been approved by the members of the club.

Cleveland Club After Sign-Boards.

CLEVELAND, April 9.—A movement to secure good roads for Ohio automobilists will be pushed with vigor by the Cleveland Automobile Club this spring. Asa Goddard, who was recently appointed secretary of the club, has assumed his duties and will commence the campaign at once. The new automobile law which sets aside the amount received from automobile licenses for the purpose of bettering road conditions in Ohio has given the movement added impetus.

The club is planning to put up a large number of guide posts on all the leading roads in this district. The Automobile Club of America is making an effort to have a uniform system of these posts established throughout the country, and the Cleveland club is waiting until the system is adopted before ordering the construction of the posts. It has been decided to erect posts along the main east and west highway, from Cleveland westward to Fremont, and eastward to Conneaut. Routes are now being looked over and locations selected.

GENERAL CLUB DOINGS.

AUSTIN, TEX.—Seventy-five automobiles are now owned in this city, and the Austin Automobile Club has been organized with the following board of officers: President, Dr. Bennett; vice-president, Frank Covert; secretary-treasurer, James Bartholomew; membership committee, Dr. Homer Hill, Will Gerhard, Howard Taylor; committee on constitution and by-laws, Dr. E. P. Wilmot, Dr. Carhart, Pierre Bremond.

NEW ORLEANS, LA.—The automobile League of Louisiana was organized on April 4, at a meeting held at the Progressive Union rooms in the city. More than fifty charter members were present for affiliation, and the following officers were elected: President, Samuel Weis; first vice-president, P. S. Milner; second vice-president, W. B. Fayssoux; treasurer, J. M. Sherrouse, and secretary, Dr. A. J. Mayer; governing board, Dr. J. M. Magruder, C. C. Hartwell, Sam Stone, Jr., Otto T. Maier, L. K. Michalscon, T. R. Toley and J. M. Burguires.

NEW YORK.—At the last meeting of the board of governors of the Motor Boat Club of America, twenty-one new members were admitted. Plans for the new club house were submitted and referred to the special committee in charge of the project. Every effort will be made to have the first international event take place some time during the summer on the Hudson river. The membership has almost reached the century mark. The houseboat recently purchased by the club for temporary quarters will be moored on the Hudson river at One Hundred and Twelfth street and be ready for occupancy May 1.

AUTOMOBILE GRIST FROM THE LEGISLATIVE MILL.

ALBANY, N. Y., April 9.—The amended L'Hommedieu bill as agreed upon by the New York State Automobile Association and the National Association of Automobile Manufacturers will undoubtedly become a law in the near future, the impression being that its passage will be prompt and in its wake all other automobile legislation will be obliterated.

Senator L'Hommedieu has received from the automobilists a copy of the amendments to his measure agreed upon in conference.

The amended bill calls for the regular registration fee of $2 on filing application and statement for registration; also on the first Tuesday in January of each year there shall be paid annually by the owner of record of each machine in the state, except motor vehicles owned or kept by manufacturers thereof or dealers therein for purposes of sale or other business purposes, a registration fee of $1.50 additional for every 500 pounds or major fraction thereof in weight of such vehicle. This fee or tax shall be in lieu of all other local or general taxes on motor vehicles as personal property. The tax until paid becomes a lien on the vehicle.

The Secretary of State is to prepare and keep on file printed lists of motor vehicle owners and their addresses, and on request shall furnish a copy to the police departments of cities and villages, and each month shall prepare and distribute supplemental lists.

A possible amendment to the L'Hommedieu bill will make it necessary for the automobilists of those states which do not recognize the New York registration to take out New York numbers themselves. Under the present law an automobilist from any state which requires registration can use his number in New York state, but New Yorkers when they go to New Jersey are required to take out a New Jersey registration.

The Tabling of the Stanley Bill.

It was very definitely established before the Ways and Means Committee last week that there is no one behind the Stanley Automobile Commission bill but the introducer. Mr. Stanley, and John C. Coleman, the attorney for that *pro bono publico* association of New York City known as the West End Association, which seems to exist to send Lawyer Coleman to the Legislature each year to appear for or against legislative measures. Officers and representatives of the New York State Automobile Association and the National Association of Automobile Manufacturers emphatically stated that they did not favor the Stanley bill and did not want it reported or passed. Moreover, Attorney Coleman, when it came his turn to speak for the bill, declared that while members of the Automobile Club of America had drawn the Stanley bill and approved it, they had recently run away from it and were running yet, leaving only the West End Association, James Van Dyck Card, Assemblyman Stanley and himself behind to support it.

The appearances against the bill were: President O. A. Quayle, of the State Association; Prof. Charles T. Terry, attorney for the Manufacturers' Association; Secretary S. M. Butler, of the Automobile Club of America; President H. A. Meldrum, of the Automobile Club of Buffalo; Lincoln C. De Cant, of Watertown Automobile Club; and President H. S. Woodworth, of the Rochester Automobile Club.

Other Bills at Albany.

Assemblyman O'Neill has added to the motor vehicle legislation record by introducing at the request of a friend a drastic speed limit bill, which provides that no person shall operate or drive an automobile on a public highway or thoroughfare within the limits of a city, town or village at a rate of speed exceeding ten miles an hour, nor outside said limits at a rate exceeding fifteen miles an hour. The penalty is ten to sixty days' imprisonment. This bill has been introduced, but it will get no farther.

The A. E. Lee bill to stop all motor vehicles within twenty or ten rods of a horse has been abandoned by its introducer.

Governor Higgins has signed Assemblyman Cox's bill to permit automobilists arrested for violation of the state motor vehicle law to give the bond of a surety or fidelity company as bail instead of cash or leaving their vehicle.

A Wise Plan for the Future.

At the recent meeting of the New York State Automobile Association representatives it was resolved that President Quayle should appoint a committee of three to attend to legislation. One should be a representative of territory north of the Harlem river, one of the territory south, and one for the manufacturers. This legislative committee is to concern itself with legislation for the future affecting automobiles, and to report to the State Association directors not later than December 1, 1906.

SIMS BILL WILL BE UNRECOGNIZABLE.

WASHINGTON, D. C., April 9.—The Sims bill will be reported to the Senate within the next few days amended in so many particulars that its author will hardly recognize it. Practically all the amendments suggested by the automobilists have been incorporated in the bill. Speed limits have been increased all along the line. Within the fire limits a speed of twelve miles an hour is provided, with a limit of fifteen miles in any public park. The maximum speed in crossing intersecting streets has been increased from five miles to eight miles and around corners from four miles to six miles. Outside the fire limits the speed is increased from fifteen to twenty miles, with a provision that when an automobilist is passing any vehicle the car must be brought to a stop upon signal of the driver of the vehicle by raising his right hand. This provision was inserted by Senator Gallinger, who took it from the New Hampshire law.

While the committee granted the above concessions to the automobilists, it unfortunately decided that imprisonment should be mandatory for the third violation of the law within one year. The original Sims bill allowed the court to use its discretion as to whether it should impose imprisonment in such cases. The fine for third offenses within one year is from $50 to $250 and imprisonment in the workhouse for not less than thirty days nor more than six months. It is believed if the bill as amended is enacted into law that the imprisonment clause will not be invoked.

OHIO WILL SPEND MONEY ON ROADS.

COLUMBUS, O., April 9.—As a revenue producer the new Sawicki automobile law is destined to be a pronounced success. That it would have the effect of materially increasing the emoluments of the state was a feature that was entirely lost sight of by the legislators, who, in placing it on the statute books, were simply actuated by a desire to provide some system of regulation for automobiles and their drives. The new law requires automobiles to be registered with the Secretary of State, a fee of $5 being exacted for each registration, and the licensing of chauffeurs, who are obliged to pay an annual fee of $2.

Secretary of State Lewis C. Laylin estimates that the law will yield at least $50,000 the first year.

Automobilists are not displeased with the law, for the reason that the money they are forced to pay under it goes to a purpose dear to their hearts—the improvement of the highways of the state. A highway department was created two years ago, but no appropriations were made for road building until this session,

when the legislature appropriated the sum of $300,000, $150,000 for this year and a like sum for next year, for this work. Add to this the amount to be realized from the automobile law during the next two years and there will be something like $500,000 available for highway improvement.

State Highway Commissioner Sam Huston has visited all the leading states of the Union in search of information for his work in Ohio, and he is now in a position to put into active effect a policy which he declares will result in Ohio being provided with the best roads in the United States.

Cleveland Club Satisfied with Law.

CLEVELAND, April 8.—Within a few days the 2,550 automobile numbers now in use in Cleveland will be meaningless tags. The new Sowicki law passed by the State legislature last week supersedes all local ordinances. Under this law the license tags must be obtained from the Secretary of State at Columbus and the tags will cost $5 each. Although the law is not yet in effect no more numbers will be given out by the city clerk's office.

Chief Clerk Mulholland, who is in charge of automobile numbering in Cleveland, is decidedly opposed to the new law. He thinks it has many defects.

The officers of the Cleveland Automobile Club believe that, all things considered, the law is a fair one. President Fred Sholes of the club says that it will be several weeks before the provisions of the bill can be worked out and the distribution of license tags started. The Cleveland Automobile Club hopes to make some arrangement whereby its members can pay their fees, register their chauffeurs and receive their numbers through the club secretary.

THE COMING SHOW AT MONTREAL

MONTREAL, April 9.—The coming automobile and motor boat show in Montreal is attracting a great deal of attention. The show will not have the full support of the local trade, and those that are exhibiting are keeping the matter quiet, so as to have the field entirely to themselves as much as possible. While it is freely admitted on all sides that Toronto is the automobile center of Canada, it is expected that the show here will eclipse that of the Queen City in matter of attendance, as a show here is entirely new and is a decided novelty whereas Torontoians can see motor exhibits of the larger American cities within easy rail distance of home. The Arena where the local show is billed to take place is admirably suited for this purpose, and is the largest covered rink in existence to-day in the Dominion of Canada.

Among the passengers on the *Virginian*, which arrived at Halifax this week, were Mr. and Mrs. E. H. Turnbull, who passed through Montreal on their way to Toronto. Mr. Turnbull is in charge of a shipment of forty-three cases of English cars and accessories, which will be exhibited in Toronto, Montreal, and possibly at St. John and Halifax exhibitions. The forty-three cases contain twenty-two motor cars of the very finest make, among them being the best known cars in the world.

Of the 1,500 motor cars used in Canada, only four or five are of English manufacture, and the object of this exhibition, which was largely put on through the efforts of Mr. Jaffray of Toronto, is to introduce these goods into the Dominion. The duty on these exhibits amounted to over $1,000.

NOT RESPONSIBLE FOR EXPLOSIONS.

A series of explosions from the sewer in Ninth avenue between Fifty-first and Fifty-ninth streets, on April 6, stirred up New Yorkers to an animated discussion as to the cause of the explosions. It was asserted in the columns of the daily press that the explosions were due to accumulations of gasoline vapor in the sewers, which had its source in drainages from the automobile garages which line Broadway from Forty-third street far up town. The representatives of the Consolidated Gas Company denied positively that the accumulations of gas were due to leakages from their mains, and the garages had to bear the odium for a few days, until a careful investigation of the facts showed the impracticability of shouldering the responsibility upon them. No less eminent authority than Prof. Frederick R. Hutton of Columbia University has declared the theory untenable and he gives three very strong reasons in support of his opinions. They are as follows:

"In the first place, the possibility of gasoline remaining in a sewer with a current in it, is practically impossible. The outflow of the sewer is rapid enough to carry away the gasoline so that its vapor could not accumulate at any point in quantities sufficient to form an explosive mixture. Secondly, the gasoline would vaporize and disappear through manholes and other outlets so that it could not accumulate in the sewer. In the third place, with gasoline at the present prices there is very little of it thrown out from any garage."

AEROPLANE THAT INTERESTS FRANCE.

ALLENTOWN, PA., April 9.—Calvin T. Fried, of this city, has proved so successful as a builder of aeroplanes that he has been engaged by the French Government to go to Paris and continue his experiments. Captain Fordyce and Lieutenant Diagnon of the French army have been in Allentown the past week witnessing Mr. Fried's experiments and have completed the arrangements for the inventor to visit France. During the out-of-door tests one of the aeroplanes developed a lifting power of 950 pounds. Indoor a tiny model was made to fly about the parlor of the inventor's home. Before sailing he will build two large areoplanes in Newark, ship the parts and assemble them in France. If they fulfil the requirements of the War Department, and he is confident they will, he will get the French grand prize of 300,000 francs and will be permanently engaged as flying-machine expert in the service of the French Government.

THE DISTRESSING DEATH OF PAUL NOCQUET.

On Friday, April 7, the body of Paul Nocquet, the talented young Belgian sculptor and daring aeronaut, was placed in the receiving vault at Pinelawn cemetery, Long Island, to await word from his family regarding its final disposition. Impressive funeral services were held in the morning at the studio of Gutzon Borglum, 166 West Thirty-eighth street, New York.

Paul Nocquet had been for several years located in New York, where he was regarded as a sculptor of great promise. At the time of his death he was but twenty-nine years old. He was a member of the Aero Club of America, and on Tuesday, April 3, made an ascent in his balloon from the northern end of the city, late in the afternoon. The wind carried him in a southerly course across Long Island to a point near Amityville, where he made a successful landing about 10 o'clock at night. Seeing lights in the distance, he started for Amityville afoot, and being unfamiliar with the locality he wandered into an intervening swamp and perished from exhaustion about two miles from his landing place.

AERONAUT HAMILTON AT IT AGAIN.

JACKSONVILLE, FLA., April 9.—Charles K. Homilton, the young New York aeronaut, had a narrow escape from drowning this afternoon, owing to the collapse of his aeroplane, which at the time was hovering over the water about fifty yards from the shore at Atlantic eBach, where the ascent was made. Hamilton's ascent was made as a curtain raiser to the automobile tournament, and the ascent was made beautifully with the aid of two powerful automobiles that sped southward down the beach with the aeroplane in tow. When a height of 200 feet was reached the aeroplane buckled, owing to the strain of the towing rope, and it turned completely over in its descent, Hamilton hanging head downward until within a few feet of the water, when the machine righted itself and Hamilton landed feet downward in the surf.

AMENDED FRELINGHUYSEN BILL PASSES.

The Frelinghuysen bill, with important amendments in favor of automobilists, passed the House on Tuesday evening last by the unanimous vote of thirty-five members.

THE FREE ALCOHOL BILL.

WASHINGTON, D. C., April 9.—Now that the House Committee on Ways and Means has reported favorably the Payne free alcohol bill, the impression generally prevails that it will be speedily enacted into law, notwithstanding the tremendous opposition of the Standard Oil Company and the so-called wood alcohol trust. As previously reported in THE AUTOMOBILE, this bill provides that three months after its passage domestic alcohol of such degree of proof, and under such regulations as the Commissioner of Internal Revenue, with the approval of the Secretary of the Treasury, may prescribe, may be withdrawn from bond without the payment of internal revenue tax, for use in the arts and industries, and for fuel, light and power.

The subject of tax-free alcohol for use in the arts has at different times demanded the attention of Congress. All other nations impose a tax upon alcohol, and other commercial nations of importance, having imposed such a tax for a series of years, have allowed the use of tax-free alcohol in the arts and industries. The United States has hesitated to enter upon this course for various reasons. On account of the high tax there is the temptation to attempt fraud upon the revenue, the fear of which has been the main obstacle to the enactment of any such legislaion.

The civilized countries which allow free alcohol methylated have found no difficulty in protecting the revenue against fraud. The Secretary of the Treasury and the Commissioner of Internal Revenue both agree that in the enforcement of this bill fraud could be practically eliminated. Another objection to the enactment of this legislation hitherto has been the question of loss of revenue. There has been no attempt to get at the amount of grain alcohol used in the arts and industries since 1890. In the census of that date it was reported and estimated at about 9,000,000 gallons. The use of wood alcohol was very small in 1890, less than a million gallons per annum. Since that date the method of manufacture of methyl alcohol has been greatly improved, and the annual output has increased, so that in 1905 it reached about 7,500,000 gallons.

The principal question is the question of the cost of production of alcohol as compared with the cost of production of kerosene and gasoline. Upon this subject there was a wide range of evidence before the committee. W. E. Lummus, who appeared in opposition to the legislation, furnished an estimate of the cost of 95 per cent. alcohol, which is 5 per cent. above the purity required for motor purposes, showing 27.75 cents per gallon. In this, however, he figures the cost of corn at 46.6 cents per bushel, and the manufacturer's expenses at 12.85 cents per gallon. As corn has averaged for the last ten years 42.36 cents per bushel, and the cost of manufacturing for ten years in the distillery at Peoria was 3.4 cents per gallon, it is quite evident that these figures are greatly exaggerated. The best test before the committee would seem to be obtained from the books of a large distillery in Peoria. At this distillery the record for ten years showed an average cost of 42.36 cents per bushel for the corn used. The average production of alcohol was 4.76 proof gallons from a bushel of corn. The cost averaged 10.78 cents per proof gallon of alcohol. The corn used in making one gallon of proof alcohol was 0.21 of a bushel, costing 8.89 cents; deducting this cost from 10.78 cents, the total cost of the alcohol, we have 1.89 cents as the cost of making one gallon of proof alcohol over and above the cost of the grain. For 90 per cent. alcohol the cost of making would be 3.4 cents per wine gallon.

It should be noted that the improvements in distilling have increased the yield to five gallons of proof alcohol per bushel of corn. With corn at this price, the cost of production for the entire period was 10.78 cents per proof gallon, or 19.4 cents per wine gallon testing 90 per cent, but this was on an average of 4.76 proof gallons for a bushel of corn. With an average of five proof gallons per bushel, which is at present realized, the cost would be about 18.4 cents per wine gallon. The cost of manufacture of crude wood alcohol is about 40 cents per gallon. Using 10 per cent. with 18.4 per alcohol, the cost of denatured alcohol would be 20.5 cents per gallon.

THE MOTOR AS A BRAKE.

The question of using the motor as a brake is one that has been much discussed of late, and some interesting results of experiments are embodied in a paper recently read before the British automobile club by Dr. W. Watson. The motor used in the tests was a slow-running two-cylinder four-cycle engine. of 4 horsepower. The cylinders were 3.5 inch bore by 4 inch stroke and cranks were set at 180 degrees. The engine was coupled by a belt to an electric motor, and the power required to drive the latter was computated from the readings on an ammater and voltmeter placed in circuit.

The Hospitalier-Carpentier high-speed manograph was used to obtain indicator diagrams of pressures in the cylinder, from which could be found the work done on the charge in the cylinders, the difference between this and the power at the electric motor giving the braking power of the motor.

The braking experiments were made with the engine running at 590 revolutions per minute and with the temperature of the cylinder walls approximately 50 degrees Centigrade. The speed was first adjusted by a variable resistance in the motor circuit, and then the watts absorbed by the motor were recorded. The watts required to drive the motor light having been found, and also the armature resistance, the power taken in driving the engine was determined.

In the first set of experiments the power required to run the engine light was found, this giving the loss due to engine friction.

In this case, with the valves and sparking plugs out, the power required was found to be 0.75 horsepower. Next the power required to run the engine under normal conditions, with throttle full open, was found to be 1.03 horsepower. Deducting the 0.75 horsepower required to overcome the engine friction, it is seen that 0.28 horsepower is expended in drawing in the charge, compressing, expanding and exhausting it. The following table shows the power required under different conditions.

HORSEPOWER REQUIRED TO DRIVE ENGINE AT 590 REVOLUTIONS PER MINUTE.

	TOTAL	AFTER DEDUCTING FRICTION	POWER SHOWN BY INDICATOR
(1) No compression	0.75	....	....
(2) Throttle open	1.03	0.28	0.27
(3) Throttle closed	1.22	0.47	0.46
(4) Throttle open, compression taps open	1.63	0.88	0.90
(5) Throttle closed, compression taps open	1.69	0.94	0.94
(6) Throttle open, exhaust valve always shut	1.6	....	0.88
(7) Throttle open, exhaust valve kept open on third (explosion) stroke	2.4	....	1.65

From this table the results follow:

	H.P.	RATIO OF BRAKING POWER TO ENGINE POWER
Power delivered at clutch when engine working	3.7	....
Braking effect when throttle closed	1.22	33%
Braking effect when throttle closed and compression taps open	1.49	40%
Braking effect when exhaust valve kept closed	1.69	46%
Braking effect when exhaust valve opened on explosion stroke	2.4	65%

Thus the maximum braking effect which can be obtained at the clutch is 65 per cent. of the power which the engine is capable of giving at the clutch. The braking effect is increased if the transmission losses are taken into account; assuming such losses to amount to 15 per cent., the ratio of total braking effect to engine power becomes 88 per cent., the same gear being supposed to be used in each case.

It will be seen from this that the engine is capable of being used as a powerful brake, and one which possesses the important advantage over ordinary brakes in that the water circulation removes the heat generated and so prevents the occurrence of burnt brake leathers or similar wear of the ordinary brakes.

THE AUTOMOBILE

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Registration Should Be Asked Only Once. It would appear to be a perfectly logical proposition that in these United States only one registration should be required for an automobile and only one license demanded of an operator. The law in many States provides that an automobilist possessing a home registration number can utilize it when touring in another Commonwealth. New York State recognizes the registration of other States, but New Jersey demands tribute from New Yorkers who use its good roads. Finally the worm is about to turn, for a likely amendment to the L'Hommedieu bill in New York State is one which will compel the Jerseymen who visit the Empire State to secure New York numbers. True it is that this will cause some inconvenience to the many Jerseymen doing business in the metropolitan district and living in New Jersey, but it is a certainty that thousands of New Yorkers find it necessary to pay tribute to New Jersey when they cross the river. This form of retaliation may awaken the New Jersey Legislature to the courtesy of reciprocal relations in the matter of registration. One registration that should be accepted throughout the entire country, is a matter for which the American Automobile Association should exert itself vigorously through its legal department, and it will earn the gratitude and respect of many touring automobilists.

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Investigation of Electric Ignition. Experimental and test work of an elaborate character is to be undertaken by Prof. J. W. Esterline of the Department of Electrical Engineering, Purdue University, Lafayette, Ind., in a field that affords ample scope for research—ignition apparatus of the explosion motor. Arrangements are being made for a thorough study and testing of the apparatus on the market, with a view to obtaining positive data on the subject; "to determine the limitations of and, if possible, the ideal conditions for the igniting of gasoline," to quote Professor Esterline.

The value of a well-conducted series of tests of this character is obvious, especially if practical probabilities, as well as theoretical possibilities, are not lost sight of—in other words, if the experimenter keeps in mind the fact that the conditions surrounding the every-day work of the explosion motor in an automobile are necessarily very different from the exceedingly favorable conditions surrounding laboratory tests. An ignition apparatus may be designed and constructed that will give excellent results under the hardest conditions that can be imposed in the laboratory, and yet make a comparatively poor showing on the road, even in the hands of the same operator, solely because of the wide difference in conditions. The presence of moisture in the atmosphere, rain, extremes of temperature, the vibration of the car, imperfect or loose connections, dust and dirt—all these conditions are encountered in actual work, and each has an unfavorable effect on the operation of ignition apparatus.

Knowing the theoretical possibilities and working with a view to approaching them as nearly as possible without forgetting that practical service is the real test, the Purdue workers should produce results of material value in constructing ignition apparatus and assist in hastening the abandonment of the too frequently used rule of thumb.

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Why Not a Wide Tire Law? This is the question that has been put many times by users of the highways, and, though nearly everyone admits the actual necessity for a law of this sort, for one reason and another it has not been enacted in those States where good roads are unquestionably seriously injured by narrow tires that cut the surface "like a knife, make ruts, let in water, and the water takes up the frost, and the road is ruined." That which is quoted is borrowed from a good roads circular, which goes on to say: "Many taxpayers cannot see the difference between taking a sledge hammer and knocking a corner off the courthouse, which is the property of the county and paid for by the taxpayers, and permitting the use of narrow tires to carry heavy loads on the highways, only to rut, ruin and destroy the road, which is also built and paid for by the taxpayers' money, the same as the courthouse." Coincident with any roads improvement, there should be the adoption of a wide tire bill, for the use of one narrow-tired wagon does more damage than a dozen automobiles driven in a reasonable manner. And the automobilist has placed himself equally on record as being perfectly willing to pay an increased registration fee as long as the money shall be used to maintain the improved roads. This is to answer the charge—not admitted—that he wears out the road in greater degree than the man who owns a horse-driven vehicle.

✷

Automobile Stage Line Development. One of the earliest manifestations of a widespread willingness to accept the automobile with confidence in its efficiency and economy has been the promotion of companies to operate electric, steam and gasoline cars for passenger transportation in city and country. This movement began in the late nineties and has grown steadily, until to-day it has reached a greater development than ever before. No city has sufficiently adequate transportation facilities to shut out automobiles of one style or another from successful competition in carrying the public for hire, and Alaska, the gold fields of Nevada and New Mexico, nor Cuba and Porto Rico are too remote to resist the invasion of the self-propelled stages.

The demand for pleasure cars has kept manufacturers so busy that they have not found it to their advantage heretofore to give special study to the field that has so long been awaiting cultivation, but during the last year they have given it more attention. We may look, therefore, for a rapid development of this branch of automobilism. As it comes about it will be of interest to watch the industrial and political effects it will produce. Doubtless one of the immediate influences it will have will be to further stimulate road improvement; another, to break down the antagonism and prejudice of a large portion of the populace, including lawmakers and magistrates; probably, also, it will in time result in keen competition with the electric and steam passenger and freight roads.

THE VANDERBILT CUP RACE ON OCTOBER 6.

October 6 will be the date of the Vanderbilt Cup race, and September 22 will be the date of the American Elimination event. The entry fee will be $1,000, and only twenty-five cars are desired for the Elimination contest, which will be for the same distance as the race itself and the first five cars to finish will constitute the American team. As before, each country will be limited to five cars. July 1 will be the closing date of all entries.

The 1906 Racing Board of the A. A. A. held its first session Monday afternoon at the rooms of the Automobile Club of America, and the decisions above noted were adopted, along with other details of what promises to be the greatest automobile race ever held either in this country or on the other side.

While it is probable that the Long Island course again will be utilized, the Board did not make any positive reply to the communication from the Board of Supervisors of Nassau County, stating that over 1,500 names had been signed to a petition asking that the race take place over the roads of that county.

The Vanderbilt Cup Commission in the past has been the A. A. A. Racing Board, the donor of the cup, and a representative of the Automobile Club of France. With Great Britain, Germany, and Italy also participating in the race, representatives from these countries will be added to the Commission.

The troublesome differential requirement was disposed of by an amendment to the racing rules, which hereafter will not refer to a differential, but will call for "two sets of brakes, each operated independently of the other, and a motor-driven reverse gear." The racing rules will receive some general attention, and Messrs. Webb, Butler and Batchelder were named a committee for this purpose.

The matter of the protest filed by the Automobile Club of Great Britain against the Darracq racer which competed in the Ormond meet, was referred to the Automobile Club of America, which acts as the foreign correspondent of the A. A. A. It was the opinion of the Board that the protest was out of order on account of not having been filed at the time of the meet, in which Mr. Clifford-Earp, of England, was a participant, and had opportunity at that time of acting in accordance with the rules.

Previous to the consideration of matters, Samuel Walter Taylor asked the opportunity of explaining criticisms which he had expressed editorially concerning the 1905 Racing Board. After Mr. Taylor had retired, a vote was taken that, owing to his intemperate utterances, his serving as a member of the Board would occasion much embarrassment, a resolution being passed unanimously to this effect. As a matter of fact, the 1906 Racing Board has yet to be confirmed by the A. A. A. Board of Directors. though this action is assured at the May meeting.

Present at the session were Chairman J. D. Thompson, W. K. Vanderbilt, Jr., E. Russell Thomas, Frank G. Webb, S. M. Butler, A. G. Batchelder, and Secretary S. S. Gorham. A. L. Riker, one of the technical advisers, was present during the discussion of the rules.

A. A. A. BOARD OF DIRECTORS.

At the April meeting of the Board of Directors of the American Automobile Association, held April 5, at the rooms of the Automobile Club of America, New York City, Third Vice-President L. R. Speare presided, with Directors W. T. White, S. L. Haynes, W. E. Edge, A. R. Pardington, D. H. Morris, G. A. Post, J. H. Edwards, A. G. Batchelder, Treasurer G. E. Farrington, and Secretary S. S. Gorham answering as present.

The work of the Association was shown to be in a most prosperous condition, the membership increasing at a rapid rate. The Automobile Club of Macon was admitted to membership, and other clubs were reported as being about to join.

It was decided to assist through the Highways Committee the Automobile Club of Germantown in its effort to improve the Philadelphia-Pittsburg trunk road. It was announced that arrangements had been made with the Official Automobile Blue Book for it to become the official touring publication of the Association.

The question of signboards was discussed, and it was announced that the Automobile Club of America had appropriated $2,000 for the erection of signs on main highways from New York to Boston and Philadelphia. A uniform sign will probably be adopted by all A. A. A. clubs for use in their respective vicinities.

THE WAYNE SIX-DAY RUN IN PROGRESS

At 12:01 Monday morning, April 9, A. L. Kull, New York representative of the Wayne Automobile Company, threw in the clutch on the big 50-horsepower Wayne car, in front of Wayne headquarters, 1659 Broadway, and started the six-day non-stop run which he is conducting to demonstrate the merits of his line. The course selected for the run is from Forty-second street to One Hundred and Tenth street and return, a distance of 7.6 miles without a skip of the motor, and was racing off lap after writing between 29 and 35 minutes, according to the condition of traffic. The test will end at midnight, April 14.

The first twenty-four hours of ther un the car covered 340 miles without a skip of the motor, and was reeling off lap after lap in spite of the driving rain, which had been continuous all day, leaving in the streets rivers of water to be ploughed through. An official observer is at all times in the car, and six operators are doing the piloting. The list includes, besides Mr. Kull, Messrs. Schwarz, Earl, Young, Rockford and Waller.

THE ATLANTIC CITY (N. J.) SPRING MEET.

Among the entries received for the Atlantic City automobile races to be held on April 25, 26 and 27, is the Grout steamer which will be driven by Harry Maynes. It will race against the gasoline cars only in the free-for-all championship, for the Atlantic City cup, which is valued at $500. Mrs. Joan Newton Cuneo is another contestant who will utilize steam in an effort to capture honors and silver shields at the tournament. She will pilot her white steamer, and in addition will drive a Maxwell speedster. Judging from the entries already received, there should be a record string of cars for the opening race meeting in the north. W. E. Edge, president of the club, says the beach is in excellent shape and some of the contestants will begin practising on it next week.

NEWARK'S CLUB TO HAVE A MEET

NEWARK, April 9.—Preparations are being made by the New Jersey Automobile and Motor Club, for an automobile meet to be held at Waverly Park late in May. Former meets held by the club have met with such pronounced success as to encourage the club to hold several such affairs each season. The crowds that turned out to witness the Waverly Park events were larger than have attended meets in many other cities, and clearly demonstrates the interest that is taken in automobiling in Newark and vicinity. The club will hold its annual meeting early next month, when the election of officers will be held, and arrangements for the season's first race meet will be completed.

THE WILKES-BARRE MOUNTAIN CLIMB.

The first annual climb up the Wilkes-Barre Mountain, which is about one mile in length, will take place May 10 in connection with the Wilkes-Barre Centennial Jubilee. The Wilkes-Barre Automobile Club is making great preparations for the climb and have succeeded in inducing the State of Pennsylvania to guard the course with mounted state constables. Entry blanks for the climb can be obtained and entries must be made before May 3 to W. J. Morgan, 116 Nassau street, New York City.

BALL-BEARINGS LITIGATION.

A peculiar fact in connection with automobile construction is that some of the improvements that are generally understood to be very modern have been anticipated by early investigators. Now and again some industrious searcher discovers a patent that in his judgment is fundamental and covers the points developed by some later inventor. Suit usually follows. The most notable instance of this sort is, of course, the litigation based on the claims of the Selden patent. More recently the two-cycle motor has been the bone of contention, and now the question of priority of invention of ball bearings in which "yielding partitions" are interposed between the balls or rollers has been brought into court for decision.

The Standard Roller Bearing Co. has begun suit for an injunction and accounting against the Hess-Bright Manufacturing Co., alleging that the well-known Hess-Bright ball bearings are an infringement of U. S. patents Nos. 417,340 and 434,472. The first mentioned was issued on December 17, 1889, and consequently, should the court decide in favor of the complainant, and an injunction issue, the construction of bearings of this type would be open to any concern that cared to use them, as the patent referred to will expire next December. Following is a reproduction of the text of the patent as issued and of the drawings of record:

UNITED STATES PATENT OFFICE.

William S. Scales, of Everett, Assignor of Two-Thirds to George G. Frost, Trustee, of Newton, and Joseph H. Clarke, of East Weymouth, Massachusetts.

JOURNAL-BEARING.

Specification forming part of letters patent No. 417,340, dated December 17, 1889. Application filed April 16, 1889. Serial No. 307,466. (No model.)

To all whom it may concern:

Be it known that I, William S. Scales, of Everett, in the County of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Journal-Bearings, of which the following is a specification.

My invention relates to that class of bearings commonly known as "ball" and "roller" bearings, in which, for the purpose of lessening the friction, the journal-bearing consists of a rolling support.

The invention consists, broadly, of yielding partitions interposed between the balls or rollers, so as to keep the latter from coming in frictional contact with each other, all as is hereinafter fully described, and subsequently pointed out in the claim.

Of the drawings hereunto annexed and forming a part of this specification, Fig. 1 represents an end view of a journal and ball bearing embodying my invention. Fig. 2 is also embracing my invention. Fig. 3 is a perspective view showing a way in which balls forming a journal-bearing may be separated in accordance with my invention. Fig. 4 is a perspective view of two rollers adapted to constitute an anti-friction bearing having one form of my improved yielding partitions interposed therebetween.

The same letters of reference designate the same parts in all of the views.

One of the defects or objections arising in the use of ball or roller bearings, where balls or rollers form a complete circle around the journal, is in the fact that at the point where the journal rests or bears with greatest pressure, the balls, or rollers, being in contact with each other, operate with very considerable frictional or grinding force, one against the other, the surfaces of adjacent balls or rollers moving in opposite directions.

In carrying out my invention in the obviation of this defect or objection, I construct a suitable box or support a for the reception of the balls b or rollers c, as the case may be, which are arranged in the box or support a around the journal d, separating such balls or rollers with yielding partitions e, here shown as springs having sufficient tension only to keep the balls or rollers separated when the journal does not rest or bear with greatest force thereon, and which will be sufficient to guide the balls or rollers in this properly-separated position between the box or support a and journal d to the point where the latter bears with greatest force upon the former, and so avoiding a possibility of one ball or roller coming into frictional contact with another, and obviating the objection beforementioned, it being observed that the frictional action of yielding partitions e upon the balls or rollers is inconsequential, and also that after the balls or rollers have been guided to position between the journal and box or support, where the former operates with greatest force, said balls or rollers will maintain their position to all intents and purposes until released, so that the yielding partitions may again act thereon.

The yielding partitions e may be variously constructed, as is manifest.

Where balls are used, as indicated in Figs. 1 and 3, I may employ as a separating means a short spiral spring, the ends of which may be soldered or otherwise secured to one of the coils, thus forming rings at each end of the coil, in which the balls may be seated, and by means of which the spring may be kept in place; or, as where rollers are used, I may employ the form of spring shown in Figs. 2 and 4, turning grooves f in the rollers, and so arranging the springs that one leaf of each will rest in a groove f of one roller and the other in a similar groove of the adjacent roller. I do not, however, confine myself to the form of springs shown, since it is necessary only that the balls or rollers should be separated by partitions having a yielding or resilient property.

Having thus explained the object and nature of my invention, I declare that what I claim is

A bearing for journals, etc., consisting of balls or rollers arranged about the journal, said balls or rollers having yielding partitions interposed therebetween, substantially as set forth.

(No Model.)

W. S. SCALES.

JOURNAL BEARING.

No. 417,340. Patented Dec. 17, 1889.

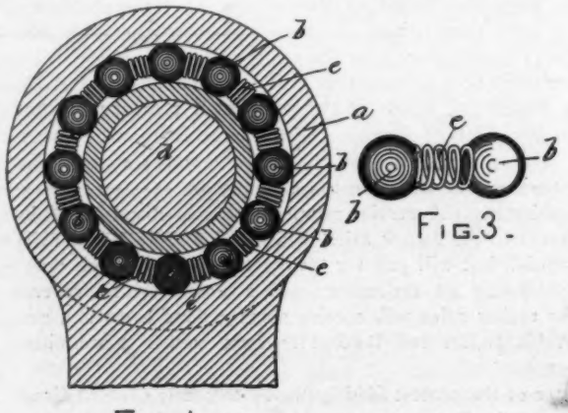


FIG. 3.

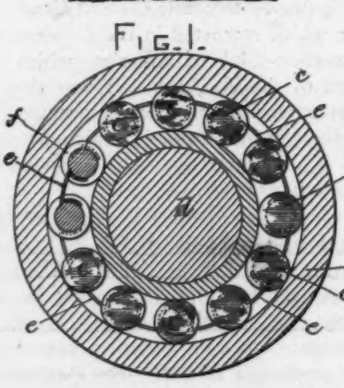


FIG. 1.

FIG. 2

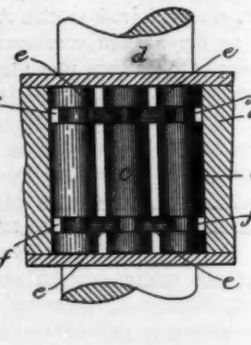


FIG. 4.

WITNESSES.
H. Brown
W. B. Ramsay.

INVENTOR
W. S. Scales
by Wright Brown Quinby & Otty
Attys.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 29th day of March, A.D. 1889. WILLIAM S. SCALES.

Witnesses:
ARTHUR W. CROSSLEY.
A. D. HARRISON.

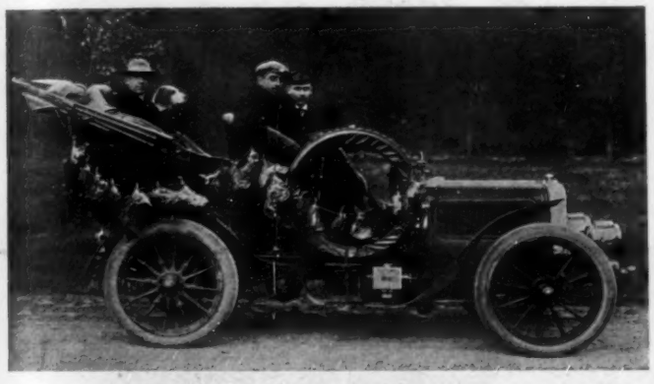
The Imperial Automobile Club at Berlin, Germany, has recently become a popular social resort. Formerly members used the clubhouse only on formal or special occasions, but now it is fast becoming the rendezvous of society. The cuisine is of the best, and the dining hall is well filled with well known personages every night. Since last January 169 new members have been added to the club's list, the total number of members now exceeding a thousand.

DECLINES TO SUGGEST RULES.

The contest committee of the National Association of Automobile Manufacturers, made a comprehensive report at the monthly meeting of the association held in New York April 7, on the impossibility of making equitable rules to select from cars of every conceivable construction, weight, power, speed, seating capacity and price, one machine as a winner, except in a speed contest. The committee had therefore been unable to make any definite recommendation for rules for the Glidden tour, as requested by the American Automobile Association. There had been a joint meeting of the committees of the National and American Automobile associations, but without arriving at any satisfactory result. In relation to contests generally the committee recommended that the association consider for approval during 1906 only such contests as are conducted by the A. A. A.

In relation to the show resolution adopted at the March meeting, and which provided that no member of the association should take part in local shows, it was decided that branch houses shall be considered in the same light as dealers, so that if a branch house manager desires to take part in a local show no penalty will attach to the manufacturer he represents.

There were present at the meeting S. T. Davis, Jr., W. E. Metzger, Windsor T. White, Charles Clifton, S. D. Waldon, W. E. Innis, C. C. Hildebrand, M. J. Budlong, E. H. Cutler, Albert L. Pope, L. H. Kittridge and S. A. Miles.



A SUCCESSFUL POPE-TOLEDO QUAIL HUNT.

PORTABLE AUTO TELEPHONE.

DETROIT, April 9.—It will not be long before the up-to-date automobilist will be able to add to his car accessories a portable extension telephone with which he can apply for the services of a repairman or call an ambulance.

It is expected that commercial automobiles will carry portable telephones so as to be in touch with the main office. Physicians, collectors, canvassers, city selling agents and all men whose business takes them about the city and suburbs may, with such an instrument, easily secure communication with their headquarters.

The plan is now being worked out under the supervision of General Manager James E. Land, of the Michigan State Telephone Company, and it is expected that the service will be in operation before long.

The telephones are similar to the small portable telephones in cafés and hotels which the waiter brings to the individual table and connects for service by inserting a plug in a tiny aperture in the wall.

At 300 or 400 places about the city and suburbs will be metal plates with holes in the bottom for inserting the plug and making connection. This service will be only for regular telephone subscribers as an extension of service.

A vest-pocket book will show the location of the nearest connection for the portable telephone. The plates for connections will be placed on telegraph poles, sides of buildings, and, if necessary, on small posts like fire-alarm boxes. Detroit will be the first city in the country to have this service.

LOADING FRANKLINS AT SYRACUSE FOR SHIPMENT.

LOADING AUTOS IN SYRACUSE.

A great deal of difficulty is being experienced by automobile manufacturers the country over in getting suitable freight cars for the increasing automobile shipments. Cars with particularly wide doors are demanded, and such equipment is scarce. Several of the railroads—the Lake Shore & Michigan Southern, Pennsylvania, and one or two others—are having considerable numbers of extra large steel freight cars built especially for automobile shipments. These have particularly large doors.

The accompanying engraving from a photograph shows how machines are loaded at the Franklin factory in Syracuse, N. Y. The Franklin company has an understanding with the Lackawanna railroad company to send all available side-door cars to Syracuse to receive Franklin shipments. Three autos are usually loaded into the freight car of average size for shipment to points east of the Mississippi river.

E. P. BRINEGAR, OF SAN FRANCISCO, ON A THOMAS DEMONSTRATION.

START OF AN INDIANA STATE DEMONSTRATION TOUR.

AN INDIANA DEMONSTRATION.

INDIANAPOLIS, IND., April 9.—A successful demonstrating tour of Indiana has been finished by the Indiana Automobile Company, resulting in a large number of sales for the various cars for which the company has the state agency. One day recently the company started four automobiles from its establishment, each automobile going in a different direction. One of these was an Olds, another a Winton, a third a Franklin, and the fourth an Autocar. Each car stayed out from two days to a week. The Winton was in the charge of George Arbuckle, a demonstrator

A MARYLAND TRYOUT OF POPE CARS.

from the factory, while the Franklin was in charge of C. E. Wheeler from the Franklin factory. S. W. Elston of the Indiana Company made a two days' tour in on Olds.

NEW CHICAGO DIAMOND HOME.

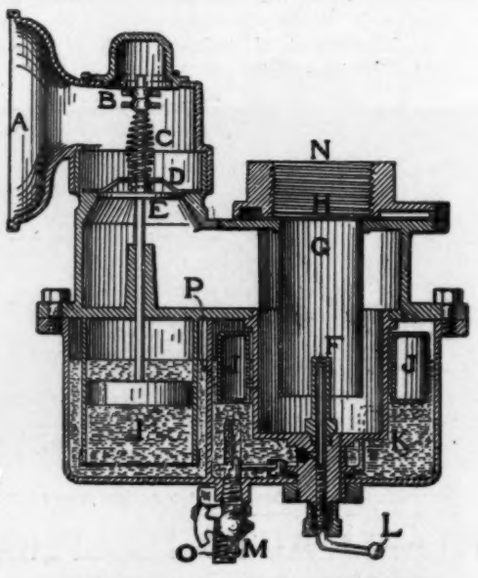
CHICAGO, April 9.—On May 1 the Diamond Rubber Company will consolidate its tire and mechanical branches at Chicago, and will move into the fine new three-story block now being completed at 1523 to 1531 Michigan avenue. The new block will have a stone front and will also provide 32,000 square feet of floor surface. The establishment will be in charge of O. S. Tweedy.

NEW STORE OF THE DIAMOND RUBBER COMPANY IN CHICAGO.

THE MENNS CARBURETER.

With the view of increasing the speed and efficiency of the motors to which they are applied, the Boston Mechanical Company, 22 Park Square, Motor Mart, Boston, Mass., has placed on the market the Menns carbureter, upon which patents have been allowed covering the special features of construction. The general type and design of the device can be seen by following the outline of the sectional drawing and its interior readily studied from the cross section.

The carbureters are constructed of brass and aluminum in three sizes, with either vertical or horizontal inlets. By following alphabetically the letters in the sectional illustration a clear conception of the working parts can be gained. The air inlet *A* is fittted with sifter, and *B* shows the two air valve adjusting nuts. *C* is the air valve spring and *D* the support for the spring. The air feed compensating valve *E* is automatic and is connected with a piston to the dashpot *I*, which contains gasoline and prevents the jerking of the valve, thus avoiding noise. The spraying nozzle *F*, which projects into the center of the mixing chamber *G*, is fitted with the needle valve *L*, which is easy of access. Throttle *H* is shown at the top of the mixing chamber, immediately below the motor connection *N*. The gasoline inlet *O* and the drain cock *M* are in close proximity. *J* shows a cross section of the float, *K* the float chamber and *P* the opening between the two chambers.



THE MENNS AUTOMATIC CARBURETER.

There are no rapidly moving parts in the carbureter. The air is filtered once and the gasoline twice before they reach the mixing chamber, and the latter is drained automatically and provision made for draining each tank. The carbureter as a whole is designed with the view of having the engine govern its action as regards supply and demand, and to be kept in perfect control with one lever. A very broad guarantee of efficiency is announced by H. E. Whiting, treasurer and manager of the company.

The London Fire Brigade is making another attempt to convert the present horse-drawn engines into automobile fire apparatus, the first endeavor, which was carried out by the Brigade's workshops, not being successful. A firm is taking the matter in hand now and converting another of the engines. Should this be favored by a better result, it would mean a great saving of time and expense.

The Italian Darracqs will make their appearance early in the spring of next year. A company has been recently founded in Rome with a capital of 4,000,000 lires, while the factory is to be erected at Naples.

AUTOMOBILE CALENDAR.

AMERICAN.

Shows.

April 7-14—Chicago Motor Boat Show, First Regiment Armory.
April 9-14—Canada Automobile and Motor Exhibition, Mutual Rink, Toronto.
April 18-21—Denver Automobile Show, Coliseum Hall. Denver Auto Show Association.
April 21-28—Canada Automobile and Motor Exhibition, Arena, Montreal.
May 14-19—New Orleans (La.) Automobile and Motor Show.
May 24-26—Open Air Show, Empire City Track, New York Trade Association.

Tours.

May 5...—Two-Gallon-Fuel Efficiency Test, Automobile Club of America, New York.
June 6...—Orphans' Day, Second Annual Celebration by the New York Motor Club.
June 16-18—Three-Day Tour, Bay State Automobile Association. Boston to Rye Beach, N. H.
June 18-23—Second Annual Economy Test, New York Motor Club.
July 23...—Annual A. A. A. Tour for the Glidden Trophy, starting from Buffalo or Cleveland.

Race Meets and Hill Climbs.

April 9-12—Pablo Beach, Florida. Spring Meet Jacksonville Automobile and Motor Boat Club.
April 25-27—Atlantic City (N. J.) Automobile Meet.
May 10...—Wilkes-Barre (Pa.) Centennial Jubilee Hill Climb.
May 30...—Boston Annual Meet of the Bay State Automobile Association, Readville Track.
Sept. 22...—American Elimination Trials for Vanderbilt Cup Race (Long Island course probable).
Oct. 6...—Vanderbilt Cup Race, American Automobile Association.

Motorcycle Tours and Contests.

May 30...—Hill Climb, New York Motorcycle Club.
May 30...—Race Meet, Chicago Motorcycle Club.
July 3- 7—Annual Endurance Run and Meet, Federation of American Motorcyclists, Rochester (N. Y.).
July 4...—Tour to Rochester, New York Motorcycle Club.
July 4...—Race Meet, Milwaukee Motorcycle Club.
Sept. 3...—Race Meet, Muskegon (Mich.) Motorcycle Club.

Motor Boat Races.

June.....—Galveston (Tex.) 100 Miles Open Race for Motor Boats. Galveston Boat Club.
June 28...—Long Distance Motor Boat Race.
July 7...—Toledo (O.) Open Race for Cruising Motor Boats, 119¾ miles. Toledo Yacht Club.
July.....—Chicago to Mackinaw, Cabin Power Boat Race (40 feet and over), Columbia Yacht Club of Chicago.
Aug.....—Duluth (Minn.) Motor Boat Carnival. Duluth Yacht Club.
Aug. 21-23—Gold Challenge Cup, American Power Boat Association. Chippewa Bay, St. Lawrence River.

FOREIGN.

Shows.

April 1-17—Budapest Exhibition. Auto Club of Hungary.
April 15-May 1—Marseilles (France) International Automobile Exhibition.
April 15-May—Milan (Italy) International Exhibition.
April 28-May 6—Geneva (Switzerland) International Exhibition.
Oct. 5-14—Leipzig (Germany) Exhibition, Krystall Palast.
Nov. 1-16—Berlin (Germany) Automobile Exhibition.
Nov. 15-24—London, Olympia Motor Show.
Nov. 23-Dec. 1—London, Stanley Show, Agricultural Hall.

Tours.

May 6...—Targo Florio Tour (Sicily), Auto Club of Milan.
May 12-13—International Light Touring Car Competition, Vienna to Gratz and back. Austrian Automobile Club.
May 13-14—Tour de France. Motorcycles and voiturettes.
May 15-16—Le Coupé d'Or and International Automobile Congress, at Milan, Italy.
June 5-13—Herkomer Cup Touring and Speed Trials, Munich, Bavaria.
June 11-16—Land's End to John O'Groat's. Auto Cycle Club of Great Britain.
June 13-16—Scottish Reliability Trials.
July 29-Aug. 15—Circuit Européen, 3,000 miles, Paris, Milan, Vienna, Berlin, Cologne, Paris.

Race Meets and Hill Climbs.

May 27...—Motor Cycle Club of France Championships.
June 26-27—Le Grand Prix, Sarthe Circuit, France.
June 29...—International Cup Race for Auto Cycles, Austria.
July 15...—Suze-Mont Cenis Hill Climb (Italy). Automobile Club of Turin.
Aug. 1-15—Circuit des Ardennes (Belgium).
Aug. 15-16—Ventoux (France) Automobile Meeting.
Aug. 14-19—Ostende (Belgium) Meet.
Aug. 23...—Semmering Hill Climb.
Sept. 27...—Tourist Trophy Race, Isle of Man, Auto Club of Great Britain.
Oct. 7...—Chateau Thierry (France) Hill Climb.
Oct. 28...—Gaillon (France) Hill Climb.

Motor Boat Races.

April 1-15—Monaco (Italy) Motor Boat Races.
April 17-19—Nice-Toulon-Nice (France) Riviera Cup Motor Boat Race.
May 6...—Suresnes (France) Motor Boat Meet.
June 28-29—Kiel (Germany) Motor Boat Races.
July 1...—Maison-Lafitte (France) Motor Boat Races.
July 8...—Le Coupé Dubonnet (France) Motor Boat Races.
Aug. 6...—Motor Boat Race on the Rhone (France).
Aug. 16-18—British International Cup Motor Boat Race.
Aug. 20-23—Ostende (Belgium) Motor Boat Races. Dover to Ostende.
Sept. 16...—Juvisy (France) Motor Boat Meeting.

DOCTOR AND AUTOMOBILE.

BY DR. P. E. DOOLITTLE, TORONTO A. C.

Almost before the general public believed that the automobile was more than a passing craze the doctors were buying cars and proving that even in its early, crude state it was of immense advantage to them in the pursuit of their professional duties.

With the present perfected state of the automobile, its advantages to the country physician are so manifest that we look forward during the coming season to a very large increase in the motor ranks by members of the profession throughout the Province of Ontario.

A satisfactory doctor's car can be bought for much less than $1,000, capable of maintaining an average speed of fifteen miles an hour over all but the very worst roads and powerful enough to climb any hill without difficulty. One such car will easily do the work of three horses for the busy country doctor, will double his leisure hours and greatly increase his profits, while during favorable weather the long, tiresome drives behind jaded horses will be delightfully replaced by the rapid motor doing the distances in a fraction of the time, without thought of pity for the motor power or serious loss of time.

With the advent of the motor in a country village and its appearance on its highways and byways, the horses will get over their restiveness and the antipathy which some farmers have against automobiles will quickly disappear. The motor car that takes the doctor to the bedside of the farmer's wife in half the time a horse would and by promptness enables him to save her life can no longer be considered a thing of evil.

With the addition to the present light car of a still lower gear and the attachment to the wheels of suitable gripping devices there is no reason why the future doctor's car cannot wade through snowdrifts quite as deep as his horse could haul him through and in better time. We believe that within the next two years the doctors will demand such an all-the-year-round vehicle, and there are no obstacles in the way of the manufacturers meeting such demand.

The exhaust from the engine can be made to thoroughly heat the car, which can readily be made inclosed, and in zero weather the doctor can go to the bedside as warmly as he can sit in his surgery. Instead of getting thawed out at the stove before approaching the sick one, he is ready immediately to give attention to his patients.

Key to Mohawk Valley.

The busy little manufacturing city of Amsterdam, N. Y., is the first point of importance in the Mohawk Valley west of Schenectady, and must be passed through by practically all motorists touring between Albany and Syracuse. It is not until the westbound traveler passes Schenectady that the real Mohawk opens up. Then, after a few miles on the valley levels, the main road (which skirts the New York Central R. R. tracks), runs also along the lower edge of the foot-hills, the latter frequently beginning a hundred feet or less from the railroad. Traveling either way you are first on one side, then on the other side of the high-speed interurban trolleys connecting Albany and Fonda; at times this line is built half way up the steeps of the valley, being at one place nearly 200 feet above the road levels.

After several miles' running through a picturesque but somewhat broken country, the tourist from Schenectady or Albany comes into East Main street, which is a good thoroughfare for at least three or four miles into Amsterdam. The writer remembers this stretch a few years back, and nothing could have been worse. To-day it is a perfect piece of macadam road, which shows how, little by little, the main roads even in New York state are being improved. Reaching the center of Amsterdam, where East Main street connects with West Main street, across Market street, the locally unacquainted tourist is puzzled which way to go. Even with the old memory of the way in and out, the writer was obliged a few days since to stop and ask questions.

The accompanying sketch is fairly clear, but a few words of explanation will be useful to the touring motorist. East Main street, whether taken east or west-bound, is perfectly clear and good riding; the Amsterdam-Schenectady trolleys run along this thoroughfare until they leave it for a private right-of-way at the outskirts. Market street, the main cross thoroughfare, is the route which one may take into certain points in the Adirondacks, though there is not yet much travel that way.

The chief difficulty in going through Amsterdam is all in the stretch about one mile west from the center of the city. West Main street is a complete thoroughfare all the way into the main road which runs farther on to Fonda. But this street, with car tracks all the way, is in exceedingly poor condition and must be at times impassable. Division street, which leaves Market street one long block from Main street, is by far the best route westward from the center of the city. It is first asphalt, in fine condition, then brick pavement to the street railway power house on the western outskirts.

However, Division street, despite its fine condition and central location, is not a complete exit. On reaching the street railway power house, the fine brick pavement ends and the motorist is puzzled by what is practically a "blind end." By far the best route west is out Guy Park avenue, but as the map shows, this avenue does not reach the center of the city, beginning about a half-mile out. Its direct connection to the center of the city, Spring street, is in poor condition; and in order to go all the way out on perfect roads it is necessary (west bound) to turn from Main street one block up Market to Division street; then left on Division street and straight ahead (asphalt and brick) to the crossing of Clinton street, as shown on the map.

Clinton is a short connecting street from Division street to Guy Park avenue; it is macadam in perfect condition, but there is no sign at either end of it. Outbound the only way to recognize it is to note where a grocery store of the ordinary sub-

TOURING ROUTES THROUGH AMSTERDAM, N.Y.

urban type is opposite a group of modest brick houses. Turning right at this point, on Clinton street one block, and then left into Guy Park avenue (which begins at this point), the motorist has a splendid wide macadam exit all the way across the little brook which flows into the Mohawk on the outer edge of the city and passes directly on into the main highway toward Fonda.

Of course the entrance into Amsterdam from the west needs the same care to reach the center of the city over good thoroughfares that is required in the opposite direction. Approaching from the west, do not bend right with trolleys, but keep slightly left (over unexcelled macadam) to Clinton street. On account of absence of sign at Clinton street, it will be necessary to recognize same from the low stone wall on the left, which ends at Clinton street. At this point turn right one block, then left into Division street.

Thence the way is clear and fine to Market street, where make right turn and go two blocks, to the corner of Main and Market streets. Here a left turn with trolleys will place the motorist on the line east to Schenectady and Amsterdam. The accompanying sketch, drawn to the scale of the official city map, after personal inspection of all points, will probably be of use to readers of THE AUTOMOBILE intending to tour this way.

To Obtain Government Maps.

WASHINGTON, D. C., April 9.—Automobilists in general and those in New York state particularly will be interested in a statement issued by Director Walcott, of the United States Geological Survey, in which he warns automobilists against persons representing themselves as canvassers for the sale of Survey maps. Persons taking orders in Brooklyn and Rochester, N. Y., for maps of portions of the state of New York, to be sold for $2 each, have represented themselves as authorized canvassers for the sale of maps prepared and published by the United States Geological Survey.

As a matter of fact, the federal survey publishes no state maps and employs no canvassers. The atlas sheet which it engraves and prints represents areas of only one-sixteenth, one-fourth, or one "square degree." The unit of publication is an atlas sheet 16 1-2 by 20 inches.

The work of mapping New York state is not yet completed, although the 202 atlas sheets of New York areas that have been finished represent the greater part of the state. The persons canvassing for the sale of separate sheets or groups of these sheets, at $2 per map, have perhaps taken atlas sheets of the survey and combined them.

The geological survey, of course, condemns such practices and has taken steps to prevent them. At the same time it desires to protect stationers and business firms throughout the country that have consented to act as agents for the sale of its topographic atlas sheets. These agents are authorized to sell the sheets at prices slightly in advance of the regular rate in order to repay them for the trouble and expense of handling the maps.

The price of single sheets sold to anybody by the U. S. Geological Survey is 5 cents; if agents ask 10 or 15 cents, most people are willing to pay the difference for the privilege of examining and selecting the maps before purchasing them, and for avoiding the delay incident to ordering them by mail. Whenever an agent shows the least disposition to take undue advantage of his customer, Director Walcott says the customer will do well to write direct to the Director of the Geological Survey, Washington, D. C.

The Olympia Building at London is once more closed, as the promotor of the Winter Sports Club is in bankruptcy. The career of this huge place has been a most checkered one.

How Automobiling Has Grown in Indianapolis.

INDIANAPOLIS, April 9.—Conditions peculiar to the city have combined to make Indianapolis within a few years one of the best automobile centers in the United States. This city did not take hold of the new method of transportation with a rush at first, but looked on while others were experimenting, and then, satisfied that the automobile was worthy of patronage, took hold of it as it did a few years earlier when bicycles were so much in vogue. Since then the automobile has gained advocates by the hundred, and where three years ago there were less than 200 cars in use in Indianapolis, there are now something like 600, and the number is increasing rapidly.

The natural advantages offered by the city and by Marion county, in which Indianapolis is located, have had much effect in increasing the popularity of the automobile here. The city authorities are exponents of good streets and the county authorities of good roads, and there is no county in Indiana that possesses better roads than Marion county.

Every alternate street in Indianapolis is kept free from street car tracks and these streets are unusually wide and well paved. They extend from one end of the city to the other and are paved with asphalt, brick or wooden blocks as a rule. There are now more than 130 miles of paved streets in good condition in the city and the appropriation for keeping them in repair is about $35,000 a year.

In Marion county there are, approximately, 900 miles of free graveled roads, and it is a special hobby of the county commissioners to keep them in good repair. This year $40,000 has been appropriated for road repair work. Under the Indiana system roads are made at the expense of the township and must be in good condition before they will be accepted by the county. After being accepted their care devolves on the county. The work is done almost exclusively with crushed stone, broken by the inmates of the county work house.

A notable fact in Indianapolis is that so many persons of moderate circumstances are the most enthusiastic owners and drivers. Locomotive engineers, small tradesmen and other hard working men who get few pleasures in life, have taken to the automobile as a source of recreation for themselves and families.

Last year the demand for the better class of cars grew steadily. There is still great demand for lower-priced automobiles, but it is safe to say that more cars costing $1,500 or more are sold than automobiles costing less than $1,000.

The automobile industry has now become one of the greatest in the city. This year, it is estimated, the eight factories will do an aggregate business amounting to $4,250,000, giving more than 2,000 men employment.

The local manufacturing concerns are: The National Motor Vehicle Company; Pope Motor Car Company, Waverley Department; Premier Motor Manufacturing Company; American Motor Car Company; Marion Motor Car Company; Nordyke-Marmon & Company; the Mohawk Cycle Company, and the company that is to manufacture the Overland. Several of the concerns have recently erected large additions to their factories to accommodate the increase in the business expected this season.

The garages of the city are large and modern in every respect. While the majority of Indianapolis drivers care for their own cars, the garages are always filled, and all do a substantial business. Among the leading garages and the automobiles they sell are the Fisher Automobile Company, Premier, National, Maxwell and Stoddard-Dayton; D. B. Sullivan Automobile Company, Mitchell and Queen; H. T. Hearsey Automobile Vehicle Company, Pope-Waverley, White and Rambler; Indiana Automobile Company, Peerless, Winton, Cadillac, Franklin, Olds, Autocar and Thomas; Gibson-Short Cycle and Auto Company, Marmon, Reo and Ford; Federal Motor Car Company, Buick and Stevens-Duryea; Central Garage, Chicago steamer; and the Columbia Electric Mfg. Co., Leader.

Among the most ardent exponents of the automobile in the city are the physicians, who have found it to be almost indispensa- in their practice. More than forty physicians are now using motor cars, and several of them own two or more, usually an electric, a gasoline runabout and a steam or gasoline touring car. There are about thirty commercial vehicles in use.

Automobiling in the Pine Tree State.

PORTLAND, ME., April 9.—Six years ago the first automobile was seen in the streets of this city, and for the first two years after its advent the appearance of one was considered a novelty. In 1904 and 1905 they became very numerous, and it looks as though 1906 would be a record-breaker. The recent automobile show, the first ever held here, was a success, and has been a great stimulus to the trade and the awakening of public interest.

Conservative tradesmen figure that the close of the season will see close to 300 cars owned in Portland, which is a good record for a Maine city. There are nine dealers representing leading makes, as follows: Maine Motor Carriage Company, Thomas, Stevens-Duryea and Oldsmobile; H. J. Willard Company, Packard, Peerless, Winton, Buick, Franklin, Cadillac and Elmore; L. C. Gilson Company, Stanley and Ford; Roy Elliott, Rambler; Allen Motor Car Company, Reo; H. W. McCausland, Wayne; H. A. Harmon, White; J. A. Dowling, Pierce, Fiat and Studebaker; C. E. Brower, Haynes.

Up to the present writing cars that have not exceeded $2,000 in price have been the most popular here, but there is every indication of higher-priced cars increasing in favor. The commercial vehicle has also made its initial appearance on our streets, a three-ton Oldsmobile having been disposed of to an enterprising business house.

What Portland needs is an automobile club with some life in it. Three or four years ago the Automobile Club of Maine was organized. For a season or two it flourished, and then it lost all semblance of life, and is now but a name. There is no reason why a large club should not only be organized here, but should flourish and own a clubhouse of its own. There would then be some possibility of securing much needed road improvement, the lack of which has been a great deterrent to business. From Portsmouth, N. H., to Portland, the first section of highway to be passed by the tourist in entering the city, the road is terrible, and in wet weather it is well-nigh impassable. The anathemas that have been hurled upon it by autoists, local and visiting, have been loud and long.

But for all of the bad roads in the western part of Maine, the eastern section of the state has better ones, and Portland derives an advantage from these. All incoming tourists—and they number hundreds during the summer time—pass through Portland. They put up at Portland garages, purchase their gasoline supplies here, buy their fishing and hunting supplies in this city for use in the Maine woods, and practically make Portland their rendezvous when touring in the Pine Tree state.

With the number of new agencies which have sprung up and the old ones still continuing, Portland has a big season in the automobile business ahead of her; the biggest she has ever known. Few Portlanders who have tried the royal sport have given it up, and some have become so devoted to it that they get a new car every year, so as to be sure of being thoroughly up to date.

CHAUFFEURS DRAW COLOR LINE.

NEW HAVEN, April 9.—At the last meeting of the recently organized New Haven Chauffeurs' Club it was unanimously voted to draw the color line. This, it is explained, was not done through any special antagonism, but several members were against admitting colored men, and to prevent a difference of feeling the order was unanimously passed. It was also thought best to draw the color line now, as this class is steadily increasing here. The new association is in no way a chauffeurs' union, but is purely a social club.

SMALL CITIES AWAKENING.

Evidences of Interest in Automobiling in Northwestern Ohio.

TOLEDO, O., April 9.—The automobile situation promises great things in northwestern Ohio during the coming season. Most of the larger towns in this part of the state have been visited by THE AUTOMOBILE correspondent during the past month, and everywhere there are evidences of great activity among automobile dealers and increasing interest among residents.

Fostoria, a town of 12,000 inhabitants, located forty miles from Toledo, is almost automobile mad. Not only is the desire to own machines prevalent among the residents, but farmers living several miles out in the country are imbued with the desire to own automobiles. This city is located in one of the best farming communities of the state, and farmers do not hesitate to put $1,000 or $1,500 into a car.

Sandusky, another city along the Lake Erie shore, and noted for its handsome stone buildings and fine roads, will boast many more automobiles in 1906 than ever before. The city is on one of the roads between Toledo and Cleveland and is frequented a great deal by automobilists who take cross country runs.

Defiance, Fremont, Findlay, Lima, Tiffin, Bryan, Norwalk, Mansfield, and a number of small cities, ranging from 10,000 to 25,000 in habitants, are also showing great demand for automobiles.

Dealers in Toledo are receiving many inquiries from the smaller places, and garages are being opened in towns where two years ago it would have been thought folly to attempt such a thing.

MUNICIPAL GARAGE FOR NEW YORK.

Municipal ownership now threatens to invade the automobile business. It has already done so, in fact, to the extent that New York City now owns nearly a score of automobiles, which are used by the heads of various departments, but Alderman John R. Davies, in a resolution introduced at a meeting of the Board of Aldermen last week, proposed that it go a long step further by establishing a municipal garage for the care and repair of these machines and about as many more which several commissioners want to add to their departments. Police Commissioner Bingham wants three autos, Commissioner Woodbury of the Department of Street Cleaning wants two; so does Commissioner Stevenson of the Department of Bridges, and Commissioner Bensel of the Dock Department thinks he needs one.

It is the belief of Alderman Davies that it would be more convenient and also more economical to have all of the city's cars housed and repaired in one central station and repair shop conducted by the municipality.

The municipal garage idea is in the nature of a conciliatory sop to the Municipal Ownership party in New York, headed by the Hearst adherents. A Republican majority of the committee of the Board of Aldermen is willing to report favorably on the request of the several department commissioners to be furnished with automobiles, but the Hearst party has sought to win popular favor by opposing the appropriations. With the hope of overcoming this opposition the city garage scheme has been proposed.

DEPARTMENT HEADS FAVOR AUTOS.

CHICAGO, April 9.—The heads of different departments of the city government are becoming interested in automobiles. Fire Chief Campion has a car and frequently responds to alarms in it. Recently in going to a fire he was driven from Fourteenth street and Michigan avenue to Fifty-fourth street and Lake avenue in seventeen minutes.

The chief is enthusiastic over the performance and said that it would have taken at least an hour to reach the scene had he driven a buggy with the streets in the condition they were in on the day of the fire. He considers the car a necessary accessory of his department and said that he understood that the finance committee had recommended the adoption of the automobile in a bill which will soon be presented to the mayor.

Not only has Fire Chief Campion become an enthusiast, but Police Chief Collins is also to secure a car for his use, and says that all commanding officers should also have them.

Chief Collins expects soon to incorporate in the automobile ordinance his road rules which will probably be brought up before the city council next week. His rules require that all vehicles must carry lights at night; slow vehicles must keep near the curb to the right; a chauffeur must turn to the left when passing another vehicle instead of cutting in to the right, and automobiles which stop by the roadside must pull up to the right-hand curb.

VALUABLE PLOT FOR GARAGE SITE.

RAVENSWOOD, ILL., April 9.—Valuable property in the most aristocratic suburbs of Chicago is to be used for garage purposes this spring. John T. Gardner, of Sheridan Park, is heading a movement to build a commodious automobile storing and repairing establishment at Wilson avenue and Dover street. The lot, besides being on the corner, and therefore valuable, is almost surrounded by fine residences. Dover street is considered one of the finest residence thoroughfares in Sheridan Park, which is an ultra-fashionable locality. The lot is fifty feet wide and eighty deep, and a real estate man told your correspondent to-day that it is worth $5,000.

FARMERS BUYING CARS.

Moderate Priced Cars Appearing in Small Illinois Towns.

MENDOTA, ILL., April 9.—Automobile dealers in La Salle County report the heaviest sales of machines to the farming fraternity that has been heard of in Illinois. An Earlville liveryman bought a second-hand Cadillac and, using it as a sample, sold the same kind of a machine to each of seven farmers. A farmer named Fallett, living near Deer Creek, bought a Cadillac and spent Sunday afternoons taking neighboring farmers riding. Up to this time he has sold machines to three of his neighbors.

Near the city of La Salle Charles Robinson, Edwin Brenneman, W. Johnson and Mike Knauff, all farmers, have purchased machines. They are equally divided between the Cadillac and Rambler. An odd incident is said to have caused Knauff to buy. A priest owned a machine and steered it against a telegraph pole, doing considerable damage. The good father was so disgusted that he offered to sell out on the spot, and the farmer took him up.

The little town of Genesee, on the Rock Island road, has bought seven new automobiles as a result of the Chicago show. Genesee wants to give a bonus for a factory.

The Ottawa Motor and Cycle Company, of Ottawa, Ill., has established a garage. There are twenty-five machines in the town.

A new garage probably will be established at La Salle this summer.

Princeton has twenty machines and an auto stage line. The owner takes from his machine seats that will accommodate twelve passengers and converts the vehicle into a baggage wagon. He operates between Princeton and Tiskilwa.

It is believed that the interest of the agriculturists in autos will result in the betterment of the roads. The man who owns a machine and sees that he may make good use of it for farm purposes will vote for highway improvements. A number of farm implement dealers have added autos to their line in this section. The prices of machines sold to the farmers range from $750 to $1,200.

TOO FRENCHY.

"Garage" is a French word being introduced into the English language by automobilists. It is a place for storing automobiles. The editor of the *Hamilton Spectator* will continue to call the place in which his machine is kept a shed.—*Stratford Beacon.*

"Shed" may properly designate the shelter under which the plebeian editor stores his car, but even he would probably admit that the automobile sheds on Broadway's "row" are more suitably designated by the French word, which he probably objects to because he cannot pronounce.

Spark Plug Attachment.

One of the leading characteristics of the Duplex attachment for spark plugs is that it will fit any plug made and can be readily attached. Its chief good point, however, is that it is designed to do away with stoppage of machine, delay and annoyances incidental to the fouling of plugs.

The illustration shows the attachment crowning a spark plug of ordinary type, the lower thumb screw at the side showing where the wire is attached. If the plug becomes fouled and refuses to work, the small switch handle shown on the top of the plug is pulled up. This breaks the direct current through the wire and brings the condenser into the circuit; and, as it rapidly becomes charged when the circuit is closed, the resulting discharge, being too heavy to be carried wholly by the short-circuiting carbon

PLUG FITTED WITH DUPLEX ATTACHMENT.

deposit, finds a path through the air, across the fouled points, making the desired spark. The device is not intended to be operated when the plug is sparking normally, and is to be used only in case of fouling, the switch being at all other times at rest in its pocket. A practical demonstration of the working can be seen during business hours at the offices of the makers, the Duplex Ignition Company, 1555 Broadway, New York City.

PLEASURE VS. COMMERCIAL CARS.

If conditions in the carriage and wagon trade are shown by the census returns for the last half century have any value as indicating probable development in the automobile business, the belief entertained by many persons that the industrial vehicle branch of the industry will in a few years surpass the pleasure automobile trade is not well founded.

The census of 1900 showed that the annual production of horse-drawn family and pleasure carriages then was 907,482, of an aggregate value of $51,504,176, whereas the number of business, farm, government and municipal wagons was only 575,351, to which may be added 2,316 public passenger conveyances, all classes aggregating a value of $32,627,787, or about three-fifths of the value of the pleasure carriages. Sleighs and sleds to the number of 118,222 are not included in these figures, but they would add $2,324,600, mainly to the pleasure vehicles. Partly offsetting these are 23,914 wagons, carts and trucks built by agricultural implement makers, and a considerable number of similar commercial vehicles made by blacksmiths and wheelwrights which should be added to the number of industrial vehicles.

After pointing out that "the shorter the life of the business motor vehicle shall prove the slower will be its general introduction, and, on the other hand, the longer its life the smaller will be the number required to be manufactured each year to supply the general demand," the *Iron Age* observes:

"Since, however, the production of business motor vehicles is greatly in arrears at present, aggregating, perhaps only 1,500 wagons total output to date, against about 40,000 pleasure automobiles annually (1905-6), a period of tremendous activity in the business vehicle field remains one of the attractive industrial possibilities of the next decade, but one which it seems the part of wisdom to frame mentally with the reservation that eventually the annual production of this class of vehicles must be expected to fall below the regular annual production of pleasure vehicles."

TUFTING BY MACHINERY.

The tufting of upholstering for automobile seats and cushions, heretofore done by hand, is now being done to some extent by machinery, which gathers the filling material into separate bunches, lays the leather into plaits to avoid wrinkles, and inserts metal prong buttons which long outlast the twine-held buttons of hand tufting. Tufting, whether by hand or machine, is done in flat sheets on boards and is fitted afterward to its place on the seat cushions or in the vehicle.

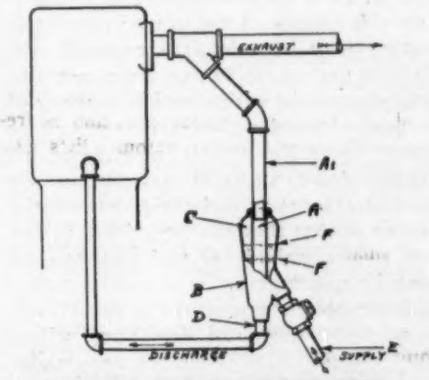
Although tufting has been practiced for about 300 years, according to the *Spokesman*, it was not until 1896 that the first machine was invented for doing the work. At that time the first patent on a so-called tufting machine was issued, and since then nearly fifty patents have been issued to different inventors, the largest percentage of them being granted to Alfred Freschl, of Chicago. Now there are nearly 450 concerns in the carriage, furniture, automobile, and casket trades using these devices, which are built by the Novelty Tufting Machine Company, of Chicago, of which Mr. Freschl is president.

In addition to the advantages of speed, economy in material and space, and cheaper labor, it is asserted that cushions and backs made on these machines outlast the hand-tufted seats. It is said that now some of the highest class automobiles, carriages and davenports are being machine-tufted.

Exhaust-Operated Pump.

At the recent motor boat show in Madison Square Garden an exhaust-operated pump exhibited by Curtiss & Waterhouse, Flatiron Building, New York, attracted much attention. This pump is a new application of hydrostatic principles that in themselves are very old, but the application is interesting, the simplicity of the system making a strong appeal to the practical minded. A reference to the accompanying diagram will show how it operates applied to a small marine motor.

With the first explosion of the motor, part of the exhaust pressure enters the pump through *A* into the chamber *C*. This creates a vacuum therein which instantly draws water through a check valve in the supply pipe *E*, which fills in and around *A*. After this the successive impacts from the explosions act upon the air in *A*, causing it to drive a part of the water through the outlet *D*, which renews the vacuum in the



EXHAUST-OPERATED WATER PUMP.

chamber *C* and again renews the supply of water through the supply pipe, thus maintaining the level of water in the pump at or about *F*. The pump is a single-casting, and it will be noticed that the outfit is entirely free of gearing, sprockets, chains, eccentrics, straps, plunger, packing, oil cup, etc.

When applied to automobile motors no check valves are used, as the circulation returns to the supply tank, but when the pump is applied to multiple-cylinder motors where the water is discharged through the exhaust, a check valve is used in the discharge pipe as well as in the intake.

Among the advantages claimed by the makers is economy of horsepower, owing to the fact that power is used in their operation that has hitherto been wasted. The makers also state that there is no perceptible back pressure, and in consequence the motor gains all the power heretofore lost in the operation of the ordinary forms of pumps. With slight variations in fittings, the pump may also be applied to steam engines.

American automobiles and gasoline engines for launches are in high favor in Australia, according to Consular Agent Weatherill, of Brisbane, Queensland, in a report recently made to the government.

AUTO-BUS LINE PROGRESS.

Ten Cars to Be Operated Between Herald Square and Race Tracks.

A local company has laid plans for operating buses between Herald Square, at Broadway and Thirty-fourth street, and the horse racetracks. The termini of the different routes to be traversed are the tracks of the Coney Island Jockey Club, Brooklyn Jockey Club, Queens County Jockey Club, Metropolitan Jockey Club, Westchester Racing Association and Brighton Beach Racing Association. The running time is expected to compare favorably with that of the train service when surface car and ferry delays are taken into consideration. For example, the total elapsed time from Herald Square to the Sheepshead Bay track is figured at one hour or less.

Ten Reo buses, with seating capacity of twelve persons each, have been ordered for the contemplated service. A fare of $1 is to be charged for a single-trip ride to any of the tracks; round-trip tickets may be sold at a reduced rate. Private parties, up to one dozen persons, may engage the entire seating capacity of a 'bus. In order that a breakdown or minor operating trouble may cause no serious delay, an extra machine will be held in reserve at midway points on the routes so that they can be quickly driven out to the stalled car and continue on with its passengers.

Automobile stage service is further advanced just outside of New York, where the transportation facilities are inadequate, than within the city limits. At Nyack, thirty miles up the Hudson River, there is a large volume of traffic, but no trolley lines. Here an automobile 'bus company has been organized and has ordered six cars. A fifteen-mile route has been laid out between Nyack and Piermont, passing through West Nyack and Fairview. Four or five stations will be established along the line.

Last week a ten-passenger omnibus was delivered to a real estate company in Mineola, L. I., and two more will follow this month. They are to be used in carrying prospective purchasers to a tract of land which has been recently laid out in town lots for sale. Later in the season a similar service is to be started in Bayshore, L. I.

A private auto line has been in operation at Lakewood, N. J., during the past winter, and, although as yet only one car is in use, two more have been ordered. During the summer they will be operated between Long Branch and Asbury Park, probably also running as far north along the shore drive as Seabright.

Early in the summer an auto-bus line is to be started in Greenwich, Conn., also one of the remoter suburbs of New York City. Regular runs are to be made from the business center to the neighboring resorts on the shore of Long Island Sound. A similar line may also be started in Bridgeport.

The Pittsburg Country Club will have an automobile wagonette to be used in transporting club members to and from the street car line on Forbes street to the Country Club house on Beechwood boulevard. The car proposed will carry eight passengers and chauffeur. It will make half-hour trips. Hitherto this service has been performed by a two or four-seated 'bus, drawn often by four horses. The car will be built on a Pierce chassis, the Banker Brothers Company having taken the order for a 32-horsepower chassis. The body will be of special wagonette type.

An automobile stage service that was started over the twenty-six-mile route between Lexington and Richmond, Ky., on March 30, with a combination passenger and freight gasoline omnibus, has been abandoned and instead the car is now making three daily trips between Lexington and Nicholasville. Although a fair business was done between Lexington and Richmond, the company believes the new route will prove more profitable. When additional machines that are expected to arrive this week are received the Richmond service will be resumed.

THE GROWING GARAGE LIST.

The Broadway Automobile Exchange, of New York City, has leased the property at Nos. 247 and 249 East Forty-seventh street, New York.

The Valley Automobile Company has opened a garage and repair shop in Warren, Ohio, with ample facilities for the storage, care and repair of cars. The floor measures 50 by 110 feet.

Even far-away Hutchinson, Kan., is to have its garage. As soon as a central site is secured it is to be erected by a man who has sold a number of the two dozen cars said to be in use in the town. There is much travel by automobile through Hutchinson.

The Italian-American Automobile Company, of New York, has leased for a number of years the building at 130 to 134 East Fifteenth street, New York, which adjoins the Academy of Music, to be used as headquarters for the Gramercy and Irving Automobile clubs. The premises are to be remodeled for a garage.

W. H. & L. C. Wolfe, of Altoona, Pa., are building a new garage next door to their place of business to take care of their increased business this year. It will be a three-story building with a finished basement, and will have a capacity of seventy-five cars. It will be up to date and will be as near fireproof as possible. The Messrs. Wolfe are large jobbers of automobile sundries and supplies and are distributers for leading manufacturers of sundries. They handle the Winton, Thomas Flyer, and Studebaker cars.

An unusually commodious and well-equipped garage has been opened in a large brick building at 255 Elm street, Oil City, Pa., by Lucas & Weaver, agents for the Thomas and Olds lines for several counties in Pennsylvania. C. H. Weaver, one of the partners, is an experienced automobile builder.

As the representative of the Crown Motor Car Company, W. A. Shaffer has secured desirable sites at Hampton and Rye, N. H., on which that company is erecting two public garages. The structure at Hampton will contain about 15,000 square feet of floor space, being 100 by 150 feet, while the one at Rye will be smaller. Each, when completed, will be superior in size and convenience to any garage yet constructed in the two towns.

A spacious and thoroughly equipped automobile station has just been opened in Sea Bright, N. J., for the storage, care and repair of cars. William Brennan, for several years engineer of the Sea Bright fire department, is proprietor and manager. The building has a floor space of about 2,500 square feet, and is situated on Church street, a few doors from Main street, the thoroughfare through which all automobilists pass en route from New York to Asbury Park.

One of the most attractive and convenient garages in the South is that just erected at 221 Second street, Macon, Ga., by the Automobile and Machinery Company, agent for White, Autocar, National electric and Franklin cars. The building is a two-story and basement brick structure, well lighted from all sides and with a double set of wide doors opening directly on to the street in front. The salesroom is 150 by 35 feet in size. The machine shop is equipped with the latest improved machinery for all sorts of repair work, and on the third floor quarters have been fitted up for the use of the Macon Automobile Club.

Lisk & Petry, automobile dealers of Hudson, N. Y., have awarded contracts for the construction of one of the most modern up-to-date automobile garages in the Hudson valley, and ground for the new structures has already been broken. The building is to be brick, two stories high, with a frontage of 40 feet and depth of 60. On the first floor there will be two large plate-glass show windows, with a door between them for the passage of cars, and on one side will be located commodious offices, coat rooms and other necessities. The rest of the floor will be given to the storage of cars, and it is estimated that from thirty to forty large cars can be conveniently stored. The second floor will be devoted to repairing cars. A wide runway will permit cars to be run to the second floor without the use of an elevator. The building is to be well lighted and provided with every convenience.

BALTIMORE'S FIRST SHOW.

Baltimore, April 9.—The first annual automobile show of the Automobile Dealers' Association of Baltimore closed last night, after a week of interest that exceeded the expectations of the most optimistic dealer. The total attendance for the week exceeded 10,000, and it is said that the stockholders' share of the admission receipts will be considerable.

A number of sales are reported and the exhibitors believe that the good results will continue to develop for several weeks. Among those who placed orders for cars were Mayor E. Clay Timanus, of Baltimore, and ex-Mayor W. C. White, of Cumberland, who purchased Ramblers.

Seventeen dealers exhibited cars, of which there were fully sixty in the building and half as many on the street for demonstration purposes. A number of chassis of different makes were shown. The exhibition was held in the new garage of the Motor Car Company. Besides the automobile exhibits there were a dozen or more stands of parts and accessories, including a pneumatic hub invented by George Akehurst, of White Marsh, Md., and a new tire tread made by the American Fabric Tire Tread Company, of Easton, Pa., neither of which has been exhibited elsewhere. Several styles of motorcycles were also displayed.

A feature of the week was a speed contest between a Model R Stevens-Duryea and a 22-horsepower Buick. The distance was 5 3-10 miles on a suburban road. The Buick led at the start and negotiated the hills in better form, but was rapidly overtaken on the level by the Stevens, which won by a margin of 1 min. 10 sec. The Buick was driven by A. W. Kershaw, and Howard W. Gill was at the wheel of the winner.

C. W. Kelsey, of the Maxwell-Briscoe Motor Company, was here during the week and endeavored to draw Gill into a match between the Stevens and the Maxwell's Gentlemen's Speedster. Kelsey will drive a Maxwell racer in the Vanderbilt eliminating trials, and Gill has reported that he will pilot one of the steamers the Stanley people are building. He and Kelsey have made an agreement that the one who makes the slowest time in the trials shall present the other a $100 cup, the style to be selected by the winner.

Plans for another show next year are already under consideration, and an effort will be made to secure the Fifth Regiment Armory for the purpose.

The dealers are naturally greatly elated over the success of Baltimore's premier exhibition. To B. R. Johnson, general manager of the show, most of the credit is due.

PHILADELPHIA TRADE NEWS.

Philadelphia, April 9.—F. A. Clark, who handles the Blakeslee cars here, started from his garage at 202 North Broad street at 4.45 o'clock last Thursday afternoon for Atlantic City, in an electric Stanhope, after previously announcing his intention of reaching that place within four hours, and without recharging. He made good his claim, much to the amazement of the doubting Thomases, and in 45 minutes less than four hours, at that. He is authority for the statement that upon the completion of the fifty-eight-mile run he had sufficient power in his batteries for an additional twenty miles. Mr. Clark proposes shortly to make the round trip on one charge.

Patrons and friends of J. L. Keir, of the local Michelin Tire Agency, were his guests last Thursday night at a banquet spread in the dining room of the Riverside Mansion Hotel, Fairmount Park.

E. W. Webster, manager of the new Acme branch in Philadelphia, has just completed the fitting up of a large new garage and salesroom at 713-715 North Broad street, recently leased by the Acme company. The Acme car is rapidly acquiring a clientele here that swears by it for efficiency and general all-round ability.

Quaker "drunks" and "disorderlies" who are arrested within the territory of the Twentieth Police District may hereafter have the doubtful satisfaction of being conveyed to jail in an air-cooled Knox "hurry-up wagon." Such a vehicle was placed in service last Saturday, and did a good day's work in an expeditious and decidedly satisfactory manner. The local Knox branch is demonstrating the wagon for the city, and it is said that if the trial is satisfactory the city will immediately order several of the vehicles for the suburban patrol stations, and eventually motorize the entire system.

PROPOSAL TO CORRECT EVILS.

For the correction and regulation of certain evils and objectionable features of the automobile retail and storage business in New York City, Charles A. Gerlach, of the Tuxedo Garage Company, has proposed the formation of another dealers' organization. He thinks a new association could deal with the subjects to better advantage than the New York Trade Association, of which he is a member.

The payment of commissions to chauffeurs on the sale of cars and on accessories, supplies and storage and repairs, is one of the evils that Mr. Gerlach thinks could be stopped if all parties interested would adopt the necessary agreement and live up to it. He would also establish a headquarters for the employment of competent chauffeurs and garage helpers, whose records would be investigated and their competence ascertained. Records would also be kept of inefficient and objectionable employees.

DEVELOPMENT IN SYRACUSE.

Syracuse, April 9.—The "expansion policy" of the H. H. Franklin Manufacturing Company, of this city, is leading to one result on the West Side which is distasteful, in a way, to many people. Such is the crush of workmen in this section of the city, owing to this growing plant, that rents are taking another jump this spring and are reaching prohibitive heights. This has led to much new building being planned in this quarter to relieve the congestion. Meanwhile, rentable property is bringing fully one-third more income than it did a year ago. This is not relished by tenants, but is one of the penalties of prosperity.

In this connection there is news of contemplated additions to the company's already large factory. A new strip of ground will be utilized for a building that will employ 700 new workmen and increase the company's output fully one-third.

ANOTHER TOLEDO FACTORY.

Toledo, April 9.—E. W. Rogers, the well-known Philadelphia designer of small power boats, is negotiating to locate a factory in this city for the manufacture of a specially designed engine which can be used either in boats or automobiles. Mr. Rogers has not yet made public the details of his engine further than to state that it affords a direct drive, doing away with a chain. The crankshaft is direct connected to the rear axle.

Mr. Rogers is now making the hull for a power boat for the Toledo Power Boat Company. The boat is to be delivered within sixty days and is guaranteed to have a speed of seventeen miles an hour. The engine for this boat was designed by Mr. Rogers, who is giving the boat his special attention.

COMPLAIN OF GASOLINE PRICE.

Pittsburg, April 9.—Local automobilists are complaining against the advance of two cents a gallon in the price of gasoline. They believe, however, that this will aid materially in getting the free alcohol bill passed at Washington. Dealers here say that the advance in the price of gasoline has made it almost impossible to handle it with profit. Loss by evaporation and leakage is considerable, and the danger of keeping a large quantity in stock is so great that it has to be purchased in limited quantities.

The Auto Repair Company is in its new garage at 559 Seventh street and has secured the Pittsburg agency for the Fiat car. The new establishment is known as the Red Front Garage and is one of the largest in the city.

The Belden transmission, made by the Belden Automobile Transmission Company, which has offices in the Bessemer building, will be used in at least three big Frayer-Miller cars which will be entered for the Vanderbilt cup elimination race next August. The Baker-Duseck factory in Cleveland has been bought by the Oscar Lear Company, builders of the Frayer-Miller, and the manufacture of the transmissions will begin there April 15. About 500 men will be employed in the factory.

INDIANAPOLIS TRADE AFFAIRS.

Indianapolis, April 9.—The Miller-Hopkins Manufacturing Company was incorporated here last week with a capital stock of $15,000. It will engage in the manufacture of automobile accessories. Quarters have been secured and the company is now manufacturing automobile horns having three square tubes, blown from the exhaust of the engine. Those interested in the company are W. T. Miller, Frank Nickols and M. W. Hopkins, of this city, and T. H. New, of Greenfield.

The D. B. Sullivan Automobile Company has just secured the 1906 agency for the gearless Lambert, manufactured at Anderson, Ind. A complete line of Lambert cars has been put in and the machine has already created a favorable impression in the city. The Sullivan company also handles the Queen and Mitchell.

The entire output of the Auto Chimes Company has been sold to the Hine-Watt Manufacturing Company, of Chicago. Work has been started on the second lot of 500 chimes, which are manufactured at the plant of the Keyless Lock Company, in this city.

Carl Fisher is negotiating with the State Board of Agriculture for the use of his airship during the Indiana State Fair in the fall. He is also having an airship built to be used at Wonderland, a new amusement park to be opened next month.

RECENT INCORPORATIONS.

Heath Dry Gas Co., Saratoga Springs, N. Y.; to manufacture automobiles; capital, $100,000. Directors, L. E. Heath and S. C. Brown, of Saratoga Springs, and F. A. Heath, of Jersey City.

Washington Automobile Co., of Chicago; to manufacture and repair automobiles; capital, $10,000. Incorporators, Albert J. Brockman, Wilbur J. Wilkins, and Leona Barth.

P. A. Fogarty, Inc., New York City, to sell and care for automobiles; capital, $10,000. Directors, P. A. Fogarty, W. P. Fogarty, and J. J. De Long, of New York.

Holdrege Automobile Co., Lincoln, Neb.; capital, $10,000. Incorporators, W. H. Paddock, A. F. Lawson, and W. A. Shreck.

Wakeman Motor Co., New York City; capital, $100,000. Directors, Harry G. Wakeman, Haskell C. Billings, and John H. Billings.

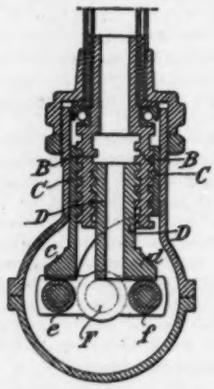
Darracq Motor Car Co., Boston; capital, $25,000; to deal in automobiles. President, A. A. Hastings; treasurer, F. W. Clark.

Patents

Steering Gear.

No. 816,935.—C. M. J. Petiet, of Villeneuve La Garenne, France.

A mechanism in which quick motion is combined with irreversibility. A screw *B*, working in a nut *C*, is threaded internally



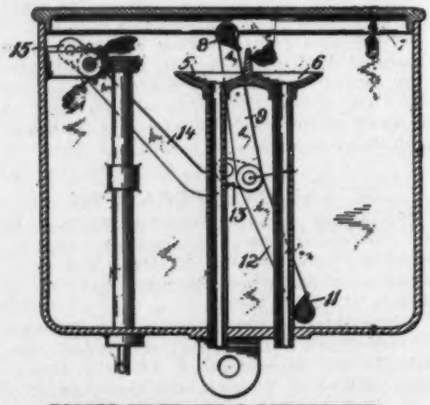
PETIET STEERING GEAR.

in the opposite sense, and actuates a second screw *D*, so that *C* and *D* are moved in opposite directions by the rotation of *B*. Projections *c* and *d* bear on rollers *e f*, carried by the rocking shaft *F*, from which the steering wheels are deflected through connections not shown.

Speed Recorder.

No. 814,071.—L. Nissum, of Southend-on-Sea, England.

A speed recorded in which a strip of paper, wound from one drum to another, is marked by a pencil on a finger worked by a piston in a cylinder. A pump connected with the machine whose speed is registered forces air into the cylinder, which is slotted longitudinally at one side



RIOTTE MECHANICAL LUBRICATOR.

for an outlet, so that the air escapes with greater facility as the piston advances.

Mechanical Lubricator.

No. 816,741.—C. C. Riotte, of Jersey City, N. J.

A series of oil-catching cups *5 6*, in two rows perpendicular to the plane of the paper, received oil picked up by the scoops *8 11* on the rocking arms *9 12*. These arms are rocked through almost a semicircle by the cranks *13 15* and link *14*, and the movement is such that, though the oil is quickly picked up, there is an appreciable dwell at the end, to empty the oil into *5* or *6*.

Speedometer.

No. 816,639.—J. H. Bullard, of Springfield, Mass.

A combination clock and speed record. A dial revolving at a uniform rate is pricked by a stylus once in every quarter mile and the frequency of the punctures indicates the speed of the car.

Turntable.

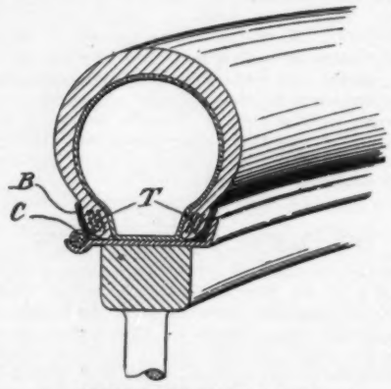
No. 816,620.—E. A. Turner, of Chicago.

A combination turntable and washing stand, so designed as to provide for drainage of the water used in washing a car standing on it.

Detachable Pneumatic Tire.

No. 816, 884.—C. S. Scott, of Cadiz, O.

A quick-detachable tire shoe whose edges



SCOTT DETACHABLE TIRE.

are reinforced by wire strands *T* to prevent stretching and are held by the removable flanges *B*, one of which is retained by an endless wire cable *C* or similar device. The shape of *B* is such as to press *C* into the groove when the tire is inflated.

Ball Bearing.

No. 817,124.—F. Loeffler, of New York City.

A ball step bearing of substantially the design shown. The load-sustaining balls are treated like cones, and the race surfaces *A B* are correspondingly beveled. Each large ball is located radially by a ring of small balls *a* and *d*, running in separate races in the ball cage.

Carbureter.

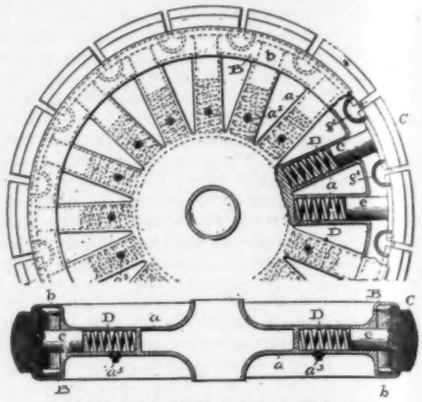
No. 816,846.—F. Charron and L. Girardot, of Paris, France.

A carbureter and throttle combined. The carbureter is not automatic, but it has an iris diaphragm surrounding the spray nozzle, which is connected to the throttle and closes coincidently with the latter.

Spring Wheel.

No. 816,666.—C. B. Kimball, of Cleveland, O.

A wheel whose tire is divided into sections *C*, each with an extension *c* to guide it and backed by compression springs *D* in the hollow spokes *a*. The especial feature of the wheel is that the interior of the



KIMBALL SPRING ROAD WHEEL.

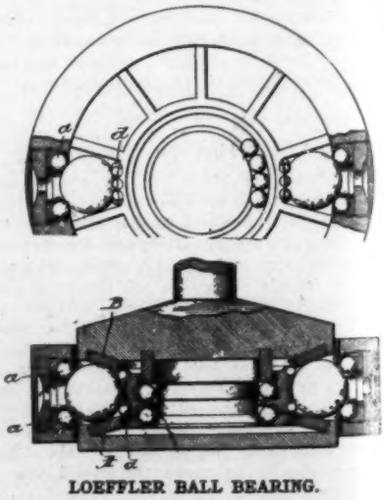
spokes is kept free of dust, which otherwise would wear the surfaces *c* by providing an inlet check valve a_3 for each spoke. As the tire sections move in and out, air enters these valves and is blown out between *a* and *c*, and between *b* and *C*. Dust caps *g* connect *C*. *C*.

Horn Blower.

No. 817,125.—G. W. Lorimer, of Piqua, Ohio.

A small foot-operated plunger pump, whose special feature is an adjustable relief valve which permits the escape of air in case the plunger is pressed too quickly, which otherwise would result in the horn failing to sound.

During the first two months of 1906 England imported 988 automobiles, aggregating $1,935,470, 244 motorcycles of a value



LOEFFLER BALL BEARING.

of $31,980, and parts of both to a total value of $1,624,090. Her exports during the same period were 218 cars, of a value of $341,260, 128 motorcycles worth $17,050, and parts worth $201,815.

News and Trade Miscellany.

The Bliss car will be handled in New York City by Frank C. Armstrong, Broadway near Sixty-sixth street.

Martin W. Littleton, ex-president of the Borough of Brooklyn, is among the most recent purchasers of Locomobile cars.

A curved glass front for a touring car has been invented by J. B. Herreshoff, of Bristol, R. I., one of the famous yacht designers of that name.

The Ritter Manufacturing Company, of Detroit, Mich., has removed from 255 to 243-245 Jefferson avenue, that city, occupying much more extensive quarters.

The Lozier Motor Company has been very busy placing agencies in the large cities of late. In Boston the Lozier line will be represented by the Harry Fosdick Company, in Philadelphia by Martin & Hart, and in Chicago by Geyler & Levy.

The recent fire at the store of the Schreiber Motor Car Company, 308-310 West Fifty-ninth street, New York, caused a damage of $25,000 to building and contents. The Schreiber company being on the lower floor, suffered mostly from water.

At the annual meeting of the stockholders of the Automobile Equipment Company, of Detroit, Mich., the following officers were elected: President, P. E. Hawley; vice-president, Stanley Brooks; secretary, Geo. E. Hawley; treasurer, R. S. Hawley.

Matheson motors will also be made for motor boat equipment in the future. Charles R. Greuter, the Italian designer, is now associated with the company, and Ralph Mongeni has been placed in charge of the testing department of the Wilkes-Barre factory.

John H. Springer, of the Springer Motor Vehicle Company's garage, in West Forty-first street, New York, has obtained a verdict of $1,000 for repairs made on John H. Flagler's automobile. Mr. Flagler is a brother of Henry M. Flagler. The original suit was for $1,600.

The 1906 handbook of gasoline automobiles has been issued by the Association of Licensed Automobile Manufacturers, and may be obtained at Association headquarters, 7 West Forty-second street, New York. The details of every model made by the licensed makers are given.

The Muncie (Ind.) Parts Company, organized last fall, has outgrown its quarters on West Main street, that city, and moved its plant and offices to 219 North Walnut street. If the company's business continues to increase at its present ratio, a new factory building will be erected in the fall.

E .R. Hollander, vice-president of the Hol-Tan Company, of New York, has sailed for Europe to visit the Fiat factory at Turin, Italy. While there he will arrange for a number of extra shipments of Fiats to this country, and complete arrangements for the Italian team that will compete in the Vanderbilt race.

The E. H. V. Company, of Middletown, Conn., manufacturers of Compound cars, has put seventy-five additional men at work in their factory during the past week, and the company announces that it has more positions for competent men. Demands for early deliveries of Compounds made the increase in working force necessary.

Hon. Timothy L. Woodruff, of Brooklyn, ex-Lieutenant-Governor of New York state, has purchased a Type E 15-20-horsepower Locomobile for his son, John E. Woodruff. Major Harrison K. Bird, Eckley H. Stearns, R. Bleecker Rathbone and John L. Riker, 2d, are among the recent purchasers of the same type of machine.

Among the participants in the endurance run conducted by the Milan (Italy) International Exhibition Company in May, there will be two Oldsmobile runabouts. Chief Engineer Stevens, who has charge of the construction of the Panama canal, is also using an Oldsmobile inspection car in his visits along the route of operations.

The Hartford Suspension Company report a very heavy trade in Truffault-Hartford shock absorbers this season. Almost a dozen high-class cars make it a part of their regular equipment. The Pierce-Arrow factory has ordered 750 sets for this year and the New York Sporting Goods Company has just placed an order for 300 sets.

The Woods Motor Carriage Company, of Chicago, has moved into its new factory at the corner of Twenty-fifth street and Calumet avenue, that city. One department of the factory was moved at a time from the old plant on East Twentieth street, during the nights, and the entire transfer was made with the loss of practically no working time.

The discussion in trade circles as to who is the authorized representative of Michelin tires in the United States is ended, according to an authorized statement by E. D. Winans, general manager of the Michelin Products Selling Company, 31-33 West Thirty-first street, New York, who says the former representatives have admitted his company's right to the title of American agents.

Arrangements have been completed whereby the Rapid Motor Vehicle Company, of Pontiac, Mich., will furnish a number of 20-passenger motor cars to the American Sight-Seeing Coach Company, which controls sight-seeing enterprises in New York, Boston, Philadelphia, Washington, St. Paul, Kansas City, Denver, Salt Lake City, and many other cities.

At a recent meeting of the stockholders of the Swinehart Clincher Tire & Rubber Company, of Akron, O., it was decided to increase the capital stock from $100,000 to $200,000. This action is due to increase in business during the past nine months. The Swinehart company has closed a contract with the Logan Construction Company, of Chillicothe, O., to furnish that concern 500 sets of clincher tires for runabouts and light commercial vehicles.

The Canadian Lock Nut Company, Ltd., of Toronto, with American offices at 6 Beacon street, Boston, are introducing a simple and inexpensive device for locking nuts to bolts that can be unlocked and again relocked as often as desired. Its mechanical principle is the right contact of two cutting edges, and in construction it is a rocking key set in a slot in the upper surface of the nut and intersecting the bore of the nut at right angles. In operation the cutting edge of this hardened key engages the softer threads of the bolt and holds rigidly.

In artistic conception as well as practical execution *The Auto-crat*, a neat little monthly magazine, issued by the Daimler Manufacturing Company, of Long Island City, N. Y., ranks among the best of its class. The March number inaugurates the periodical, which is, as its publishers put it, "a little magazine of comment and reflection for the edification of autoists and others." Much of interest is to be found in its pages and some special articles are devoted to the special features of the American Mercedes car, of which the book is an able exponent.

George J. Jackson, treasurer of the National Conduit and Cable Company, has placed an order with the Rainier Company, of New York, for two cars, one a limousine and one a touring car. Mr. Jackson has in the past been an enthusiastic horseman, and has maintained a large stable of fine stock at his summer home at Monmouth Beach, but he has sold the entire outfit and gone into automobiling. Other very recent Rainier purchasers include Thomas F. Eagan, well known to race goers as the publisher of programs; J. J. Williams and Benj. R. Stevens, a banker, who buys his second Rainier.

Perhaps as strenuous a line of service as was ever given a touring car is now being given a Stearns 40-45 horsepower machine in the city of Cleveland. The car in question was purchased from the F. B. Stearns Company, of that city, by the municipal government, and it is used continuously by practically all the city departments. When one department is through with the car another takes it out, and as much of the running is in the suburbs, over bad roads, night and day, the machine gets some rough usage. Since last fall, when it was delivered, it is reported to have had a perfect record.

The Diezemann Shock Absorber Company, of Hoboken, N. J., state that in view of criticism made upon the recent decision by Judge Lacombe, on a motion for a preliminary injunction in the suit of Hartford *vs.* Hollander, publication of the text of the decision will prove of interest. It is as follows: "Upon the argument the suggestions as to trade-mark and unfair competition were not pressed. There is left only an application for injunction upon an unadjudicated patent of recent issue, where there is a substantial conflict as to the prior art. These questions should be left for final hearing. Motion denied."

During the past few weeks the National Motor Vehicle Company, of Indianapolis, Ind., has made a number of additions to its plant by securing all the room in outside buildings in the vicinity of its factory that could be got hold of. This has been necessary owing to the rapidly increasing business of the company, and in order to keep up with orders. Plans are under way at the present time for the construction of an entire new factory, equally as large as the present plant. It is quite likely that a National racing car will be entered in the Vanderbilt Cup race next fall. Plans are being prepared for its construction at the factory.

The carbureter used on 1906 Columbia cars is of the float feed aspirating type, but has no springs or needle. Primarily the air is received through a round port, opening between the two cylinders, so located to equalize the temperature as the air is admitted. The auxiliary air supply is taken in at the bottom of the carbureter through a series of small ports, opened and closed by a barrel with corresponding ports, which rises and falls automatically with the requirements of the motor. The throttle is set horizontally in the mixing chamber at the point where the gas intake pipe leaves the carbureter and is not connected with the governor, but actuated by the foot lever in the toe board, the governor speed being determined by a hand lever mounted in the steering wheel. The governor controls a bypass valve which is mechanically operated as the balls throw in or out.

A four-story addition to the factory of the National Carbon Company, at Cleveland, O., has been completed, with ground floor dimensions of 100 by 200 feet.

Monograms on demonstrating cars are getting to be all the rage with Michigan factories, many of which have taken up the fad. The monograms are engraved on polished brass.

During the recent municipal election at Grand Rapids, Mich., Alderman Harry White, of the tenth ward in that city, provided automobiles in which weak and crippled voters in his ward were carried to the polls.

City officials of Spokane, Wash., are considering the advisability of purchasing a $3,000 patrol vehicle. They claim its speed and convenience would be a great aid to the police department, but one of the commissioners is opposed on the grounds of the doubtful practicability of the outfit, and will have to be won over.

Geyler & Levy, 390-392 Wabash avenue, Chicago, have closed with the Lozier Motor Company, of New York City, for the western agency for the Lozier cars, which they will handle in addition to the Autocar. It is understood that Dan B. Southard will continue as Chicago agent for the Lozier motor boats and marine motors.

According to the report of the Appraiser of the Port of New York, George W. Whitehead, there has been a large increase in the entry of automobiles for the first three months of this year as compared with the same period a year ago. In March 109 machines, valued at $340,000, were imported, as compared with 49 cars in the same month of 1905. Since the first of the year 300 cars, appraised at $1,000,000, have been imported at this port. In the corresponding period of 1905 only 172 cars were received here.

The Manufacturers' Advertising Bureau, of New York City, for many years located on Liberty street, has removed to 237 Broadway. The bureau was established in 1877, and there is probably no concern of its kind so well known in the machinery and engineers' supply trade as this house, and its proprietor, Benjamin R. Western. For some time the Liberty street offices have been cramped, and the removal was made to meet the demand for more room and better office facilities. The bureau intends to broaden its work in the future, and, while particular attention will be given to advertising in the trade and technical journals as heretofore, it will also be equipped to handle advertising in the newspapers, magazines, and all other periodicals as well.

The mechanical branch of the Association of Licensed Automobile Manufacturers held its regular meeting in New York, Friday, April 6. A large attendance of chief engineers, superintendents and designers was present, and important measures concerning the adoption of fixed standards for screws, nuts and bolts were adopted. Besides this, the subject of noises in automobiles, particularly the noise of the gears, was discussed and some important conclusions reached as to the causes of the noises and the ways to obviate them. Incidentally, the best compositions of metal for frames and the question of frame construction were gone into. An interesting circumstance was that chemical analysis of the metals used by European makers were submitted to the American mechanics.

At the works of the Stoddard Manufacturing Company, in Rutland, Vt., there is under construction a motor boat thirty-five feet long, for Harvey E. Miller, of Mamaroneck, N. Y., a member of the Larchmont Yacht Club. The planking will be double; the first of one-quarter inch thickness, which will have a covering of silk, and then three-eights on an incheplanking outside of that. The engine will be a 15-20-horsepower three-cylinder Fairbanks, fitted with analuminum base. The speed of the boat, which will be named the *Fairbanks II*, is expected to be twenty miles an hour. The boat was planned, with very few changes, after the launch *Key West*, which was fast. Mr. Miller will race the *Fairbanks II* whenever practicable during the coming season.

The youngest professional chauffeur in Indianapolis is Harry Knight, a fifteen-year-old boy who drove last year for Col. Russel B. Harrison, son of the late ex-President Benjamin Harrison. Last season he drove Col. Harrison on an extensive Eastern trip, followed by a trip to Milwaukee, on both of which he attended to the car himself. This season Knight will drive for T. B. Griffiths, and is now in the factory of the Nordyke & Marmon Company, learning the construction and operation of the Marmon car owned by Griffiths. Colonel Harrison has employed John Sloan, a seventy-pound driver, still in his teens, to drive for him this season. Sloan will drive a Queen car, and is now taking a course of instruction at the garage of the D. B. Sullivan Automobile Company, agents for the Queen.

PERSONAL TRADE BREVITIES.

Ralph Temple, president of the Chicago Automobile Dealers' Association, has been confined to his house with illness, but is now convalescent.

George H. Day, general manager of the Association of Licensed Automobile Manufacturers, has returned from his Southern trip much improved in health.

William A. Allen, who is associated with the Winton branch in New York City, has been elected assistant secretary of the New York Automobile Trade Association.

Paul Picard, general manager and vice-president of the American branch of the Renault factory, has assumed charge of the branch house just opened in Chicago.

E. W. Sutphen, head of the English Daimler Automobile Company, sailed for England April 3. During his absence Daimler interests will be looked after by J. E. Dewar.

S. A. Miles, secretary of the N. A. A. M., has returned to the New York headquarters from his recent West Indian trip. He expressed himself infatuated with Jamaica as an automobilist's winter paradise.

R. Gordon Carew has been appointed manager of the New York branch of the Stearns car at 121 West Eighty-ninth street, superseding George Woolston, who will continue with the house in another capacity.

Edward Q. Cordner, Jr., of New York, has joined the selling force at the Chicago branch of the Rainier, which is in charge of his father. Mr. Cordner, Jr., was formerly assistant treasurer of the Broadway Theater.

Bert Morley, for the past three seasons sales manager of the Detroit parts department of the Briscoe Manufacturing Company, of Detroit, Mich., has joined the business force of Hayden Eames, of Cleveland, O.

L. C. Burnet, general sales manager of the Hartford Suspension Company, of New York, has resigned his position with that house to accept a similar position with the Diezemann Shock Absorber Company, of Hobokén, N. J.

A. E. Gallien, for several years American manager for the Samson Leather Tire Company, will return to Europe on May 3, to engage in another branch of the company's business. Count du Poniac will be M. Gallien's successor.

Eugene Ott, machinist and consulting engineer for the Wolverine Motor Company, of Grand Rapids, Mich., has returned from a four months' trip along the rivers of the Republic of Colombia, made in the interests of the firm. The company first introduced motors in South America about fifteen years ago, and since that time the business on that continent has grown to huge proportions. Mr. Ott will soon make a similar trip to Australia.

John C. Speirs has been appointed manager of the factory of the Midgley Manufacturing Company, Columbus, O., and has assumed his duties as such. In obtaining the services of Mr. Speirs the Midgley company has secured one of the best known men in the trade, both as a producer and manufacturer, and his wide acquaintance and knowledge of the automobile business in general will be of great value to them. In the past he has been a large and exclusive user of Midgley pressed steel wheels.

IMPERIAL GARAGE BURNED.

A spectacular three-alarm fire on Sunday morning gutted the Imperial Garage, at 56 West Sixty-seventh street, New York, and besides threatening the St. Nicholas Rink and Healy's restaurant, adjacent, destroyed or damaged thirty or more automobiles that were in storage. At considerable risk the firemen hustled about fifteen machines out from the three floors of the building, using the elevator and runway until the latter was cut off by the flames. Then the firemen went into the basement and tried to save the machinery, working knee deep in water among floating gasoline barrels. Meantime the roof of the building burned through, fuel tanks on the cars remaining in the building burst and scattered their volatile fuel and finally the weight of the cars broke the floors through and nearly entrapped the firemen in the basement.

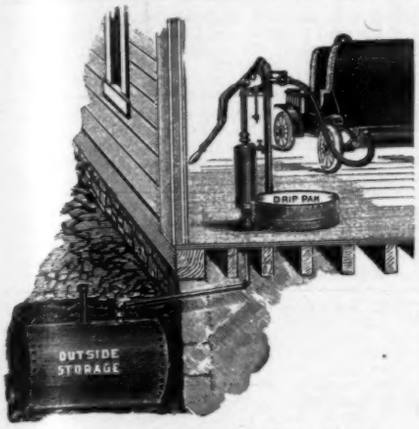
Later in the day many owners of cars who called to take their machines out for a day's enjoyment in the grand spring weather gazed sorrowfully upon the ruins.

LONDON SHOW FOR BUSINESS CARS.

The British Society of Motor Manufacturers and Traders has arrived at the satisfactory decision to exclude commercial vehicles entirely from the November Olympia show and to hold an April exhibition solely for the business side of the industry at Olympia. This arrangement permits the fullest extension to both the pleasure and commercial section, whereas heretofore the latter was always allotted a secondary position, the demands for space by the big makers rendering proper accommodation for 'buses and vans almost impossible. The marine section is to be a feature of the new commercial show, which will make the fifth of its kind in London from November, 1906, till April, 1907.

INFORMATION FOR BUYERS.

STORAGE TANK.—Outfits for the safe storage of gasoline, consisting of metal tanks to be sunk in the ground outside of the building and self-measuring pumps



EASTERN GASOLINE STORAGE OUTFIT.

connected up from the inside of the building are made by the Eastern Oil Tank Company, 146 Fletcher street, Lowell, Mass. These outfits are made in two styles, No. 2 having a pump that delivers one quart or two quarts at each stroke, and an anti-drip nozzle, shut-off cocks and stuffing boxes to render evaporation impossible. The tank is made of heavy steel, and designed to be buried in the ground at any distance and at any angle from the building. No. 3 outfit, illustrated herewith, is especially designed for automobile use. One stroke of the pump delivers one quart of fuel, so that the quantity delivered to the tank of a car can be determined without handling as the filling proceeds.

GAS LAMPS.—Under the name Climax Belle, a new headlamp has just been brought out by Sibley & Pitman, 26 Warren street, New York, as an addition to their line of Climax gas and oil lamps. The new lamp is of very attractive form, for use with separate generator or gas tank. It has a neatly spun body, reflector back, and hinged glass frame. The exterior is made as simple and free from protuberances as possible, there being a noticeable absence of chimney and of bracket lugs. The ventilator holes extend all the way around the lamp body. The lugs or sockets for the bracket open close to the base of the lamp, allowing the bracket prongs to penetrate the interior of the lamp up to the point where the handle is riveted on, thus affording an unusually firm seating. The Climax Belle opens at both front and rear, and both doors have safety locks. The front glass is a polished condensing lens. The lamp stands 11 3-4 inches high, is 10 inches deep and has a 10-

CLIMAX BELLE GAS LAMP.

inch front. There also belong in the Climax family the Alpha headlight, a stationary and a swinging searchlight, a basket type generator, and oil side lights and tail lamps.

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SPECIAL NOTICES

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AUTOCAR FOR SALE—Type XI, 4-cylinder 1905 model, with extension top, full lamp equipment, etc.; bargain price, or will accept a good runabout in exchange. The Starin Co., 72-74 Main St., North Tonawanda, N. Y. Apr12

AUTOMOBILES—$150 up; steam and gasoline; genuine bargains. National Garage, Portsmouth, N. H. May3

AUTOMOBILE BARGAINS — Automobiles bought, sold, and exchanged. We are the largest dealers of new and second-hand automobiles in the world. Send for our complete bargain sheet, which includes Cadillacs, Oldsmobiles, Thomas, Packards, Great Pierce Arrows, Pope-Toledos, Pope-Tribunes, Ramblers, Rocket-Schneiders, Panhards, Olds runabouts, Franklins, Haynes-Appersons, Generals, Queens, Autocars, Maxwells, Jacksons, Reliances, and every standard make. It will pay you to call and investigate our line before purchasing. Times Square Automobile Co., 164 West 46th St., New York City—Two doors east of Broadway. Apr12

CADILLAC tonneau car, 1904, for sale cheap; A1 condition; demonstration at Koehler's Garage, Brick Church, N. J. Apr12

CHAUFFEUR—Careful driver open for engagement May 1st; would prefer position with party having two or more cars and private garage, who will employ also mechanician who is a thorough machinist and has complete outfit, engine lathe, tools, etc.; working together we will guarantee keeping cars in running condition; no objection to reasonable uniform. Experienced, care The Automobile. Apr12

FIAT—16 h.p., 1903, just put in perfect condition and repainted; Vendrine body; little used; owner has bought larger car; will sell cheap. Fiat, care The Automobile. Apr12

FIVE 10-passenger automobiles must be sold at once; first-class condition and practically new. 334 W. 44th St., New York City, N. Y. Apr12

FOR SALE—One set 28x3 1-2 Dunlop tires and rims. C. A. Ross, Little Falls, N. Y. Apr19

FOR SALE—White steamer, fine condition, Model D. Wm. Meade Stith, Petersburg, Va. Apr19

FOR SALE—15-tube radiator, $10; 24-tube, $15. A. M. Symonds, 901 No. Fairfield Ave., Chicago, Ill. t.f.

FOR SALE—1905 Indian motorcycle, A1 condition, extra tire. Address R. D. C., care The Automobile. Apr26

FOR SALE—'03 Winton touring car, fine condition; or will exchange for property. Box 784, Cincinnati, Ohio. Apr12

FOR SALE—Flywheel and disconnecting clutch for 1903 or 1904 White touring car. Portland Garage, Portland, Me. t.f.

FOR SALE—1 4-cylinder and 1 2-cylinder Continental engine, $200 and $150. Auto Parts Co., 49 Canal St., Chicago, Ill. Apr12

FOR SALE—$5,500 Darracq, practically new, 1905 late model; complete at $3,000; swell proposition. 515 7th Ave., New York City. Apr12

FOR SALE—One 8-h.p. engine, transmission, all levers and whole power plant, nearly brand new, at a slaughter price of $65 if taken at once. O. L. S., care The Automobile. Apr26

FOR SALE—1904 Rambler Motorcycle, used one season; new tires, new drive chains; thoroughly overhauled; $100. Heermance & Gray, Hudson, N. Y. Apr12

FOR SALE—Jackson touring runabout, recently overhauled, two new tires, one extra, paint fine, square hood, A1 condition; first check $350 takes it. C. E. Speer, Hillsdale, Mich. Apr26

FOR SALE—1905 Pope-Toledo, type 8, with extras; 1905 Jackson, 18 h.p., 1905 White steamer; all in fine condition; no reasonable offer rejected. W. M. Thompson, Jackson, Mich. Apr12

FOR SALE—250 autos of every make; largest stock in this country; prices the lowest and quality highest; write for list. Broadway Auto Exchange, 511 to 517 7th Ave., near 38th St., New York City. Apr12

FOR SALE—1905 Type F Franklin; 1903 Winton; 1903 2-cylinder Pope-Toledo; 1904 Cadillac; 1904 Rambler; all in fine condition; no reasonable offer rejected. Easton Automobile Co., Easton, Pa. Apr19

FOR SALE—One Pope-Toledo, 30-35 h.p., 1905 model, $2,000; with Cape top, glass front, newly painted, in fine order. One 2-cylinder, 1905 Columbia, in fine order. Amos-Pierce Auto Co., Syracuse, N. Y. May3

FOR SALE—One Hartford carriage tire vulcanizer with 3-inch round die and base; one flat die and clamp for double-tube tires, and thermometer; never used; price low. Address Geo. O. Hawes, Sanford, Me. Apr12

FOR SALE—Cadillac, Model B, 1905, fine condition; oil and gas lamps, generator, horn, runabout deck, detachable rear-entrance tonneau, $500. Address Alfred G. Herrington, Mgr. Star Theater, Scranton, Pa. Apr12

FOR SALE OR TO LET—Two-story and basement substantial brick stable, with living quarters, suitable for garage; size 25x100. 238 W. 108th St., near Broadway. David & Harry Lippmann, 198 Broadway, New York, or your own broker. Apr12

FOR SALE—White Steamers. A few 1903's, overhauled and repainted at the factory, and guaranteed in first-class mechanical condition; all equipped with engine cutouts and other late improvements; $750 f.o.b. Marion, O. C. C. Stoltz, Marion, O. Apr19

FOR SALE—One Pope-Waverley Chelsea, batteries in good condition, $450; one Pope-Waverley runabout, batteries in fine condition, price $300; one White Stanhope, in good condition, $250. Central Garage, 332 E. Market St., Indianapolis, Ind. Apr19

FOR SALE—Oldsmobile tonneau car with top, top entirely new; car good as new or better; equipped with many special things; a great bargain; ask about it; a fine car, in perfect order, new paint; owner delighted with car, but has larger one. Address Mac, care The Automobile. May3

FOR SALE—One 12-14-h.p., 3-cylinder, water-cooled auto motor; used only two weeks; in first-class condition, with accessories complete; first check for $175 takes it. One 14-16-h.p., 4-cylinder, air-cooled motor, used only in shop tests; will sell cheap; write for details. One 4-h.p., single-cylinder marine motor, new, in good condition; cheap. Address C. B. Kirkham, Bath, N. Y. Apr12

FOR SALE—Pope-Toledo, maroon finish, fine condition, $1,400; Franklin tonneau, $650; Panhard, 8 h.p., $750; '04 National, 20 h.p., $800; '05 National, 30 h.p., $1,500; '06 Orient, 4-cyl. runabout, $1,000; '05 Northern runabout, $250; '05 Marion, 4-cyl., 16 h.p., $800; Yale tonneau, 2-cyl., $475; also a new Aster chassis, 30 h.p., 110-in. wheelbase, 34x4 Michelin tires, $2,800. Homan & Schulz Co., 38-40 W. 62d St., New York City. Apr12

FOR SALE—Loco steamer, good running order, $100.

White Stanhope, good as new, without tires, $225.

Fine steam runabout, $175.

All material for building new steamer, including set of new Diamond tires, $150.

A lot of second-hand engines, steam air and water pumps, burners, boilers, etc., etc.

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